DOCUMENT RESUME

ED 305 453 CE 052 160

AUTHOR Cummins, John; And Others
TITLE Adult Learning Strategies and Approaches (ALSA). Resources for Teachers of Adults. A Handbook of Practical Advice on Audio-Visual Aids and Educational Technology for Tutors and Organisers.
INSTITUTION National Inst. of Adult Continuing Education, Leicester (England).
REPORT NO ISBN-0-900559-60-8
PUB DATE 87
NOTE 67p.
AVAILABLE FROM National Institute of Adult Continuing Education, 19B De Montfort Street, Leicester LE1 7GE, England (4.50 pounds).
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Adult Education; Adult Learning; Audio Equipment; *Audiovisual Aids; Computer Assisted Instruction; *Educational Resources; *Educational Technology; Foreign Countries; Instructional Materials; Projection Equipment; Reprography; Resource Materials; *Teaching Methods; Videotape Recorders; Videotape Recordings; Visual Aids

ABSTRACT

This handbook is part of a British series of publications written for part-time tutors, volunteers, organizers, and trainers in the adult continuing education and training sectors. It offers practical advice on audiovisual aids and educational technology for tutors and organizers. The first chapter discusses how one learns. Chapter 2 addresses how to become conversant with the wide variety of resources available, course design, and design and development of instructional materials. Chapter 3 looks at ways to present graphic material to the class. It considers basic lettering and drawing techniques and concentrates on the more traditional and commonly used visual aids--chalkboards and pinboards, charts and posters, and materials prepared for display in other forms. Chapter 4 on reprographics discusses ways of producing multiple copies. Chapter 5 on projection focuses on enlarging the material. Overhead projectors, slide projectors, film strip projectors, episcopes, and cine film projectors are covered. Recorded sound is the focus of Chapter 6. Chapter 7 is a guide to using video in the classroom and discusses film making. Chapter 8 offers pointers on computer-assisted learning. Sources of additional information are provided. A note of caution in the use of audiovisual aids is given in chapter 9. Chapter 10 lists further reading resources and useful addresses. (YLB)

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HANDBOOK OF PRACTICE

RESOURCES FOR TEACHERS OF ADULTS

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ADULT LEARNING STRATEGIES AND APPROACHES (ALSA)

ADULT LEARNING STRATEGIES AND APPROACHES (ALSA) is the series title for a new range of publications written for part-time tutors, volunteers, organisers and trainers in the adult continuing education and training sectors.

The ALSA series, of which this handbook is a part, will be constructed around a framework of headings viz. *factors surrounding adult learning; general methods; ideas, skills and resources; special target groups; appraisal/assessment/evaluation techniques; educational technology* etc. The handbooks will not necessarily be published in chronological order but the set will be completed over a five-year period.

NIACE would welcome comments on the ALSA series and suggestions for titles from readers and practitioners.

Titles in the ALSA series:

Resources for Teachers of Adults £4.50

Modern Language Learning:
Tutors' Handbook..... £2.80
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ISBN: 0 900559 60 8

PRICE: £4.50 (inc. p&p)

ADULT LEARNING STRATEGIES AND APPROACHES (ALSA)

RESOURCES FOR TEACHERS OF ADULTS

A handbook of practical advice on audio-visual aids and educational technology for tutors and organisers

by John Cummins
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SOURCES: As stated in the Foreword, some of the material in the text is developed from 'Teaching and Learning Aids', by John Cummins (NIACE, 1972), and the subsequent NIACE series devised by John Cummins in collaboration with Don Holt and Allan Kingsbury. Acknowledgments are due to the earlier texts, and to Ann McGough and others who prepared those illustrations which are reproduced here.

ILLUSTRATIONS: First published in this edition – photography by Maura Cummins; line drawings by Jo Brown; diagrams by John Cummins.

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Foreword

This book, RESOURCES FOR TEACHERS OF ADULTS, is part of the ALSA series and it has been produced in answer to the great demand from the field for an updated version of previous NIACE publications. TEACHING AND LEARNING AIDS (1972) and the booklets in the TEACHING ADULTS series (1977 onwards) were perceived to be of tremendous value by tutors and trainers alike. The material in this new version has been particularly selected in the light of stated interests and needs in the field of staff development and training.

1. TEACHING AND LEARNING

There are a great many reasons why teachers of adults do not prepare and make greater use of teaching and learning resources. There are some who assume that neither they nor their subject require help. There are many who believe that modern equipment is complicated to use, and traditional visual aids difficult to make and expensive to buy. No technician; no resource centre; no time to spare; no basic tools, material, equipment; uninviting situations for display or presentation – all are real difficulties which most adult tutors must be prepared to face, at least some of the time. But it is the contention of those who have contributed to this book that considerations of this kind can never justify teaching by talk alone, *because that is a mode of teaching which singularly underuses the sensory capabilities of the learner.*

The essence of teaching is communication. Knowing your subject well, even expertly, does not make you a good teacher, or even a teacher at all. To teach is to transmit an understanding: as teachers, we have to assist the student to form an image or a concept of whatever it is we are trying to communicate. With practical subjects this may seem to present fewer problems. With abstract theories there are likely to be more difficulties. But whatever the subject, we have to put over our ideas in terms which our students can understand. If we are not being understood, then we are not communicating and *not teaching.*

The teacher's aim is always to meet the needs of the learner by the clearest exposition of the subject matter. Requirements for successful learning will vary from subject to subject, and from group to group. But it is in the context of the relationship with the learner that the teacher has to determine WHAT is to be learned, and WHY. The teacher has also to determine HOW to communicate, to make the most appropriate choice from whatever techniques are available – from blackboard and chalk to television and video camera – and use that equipment to the best possible advantage.

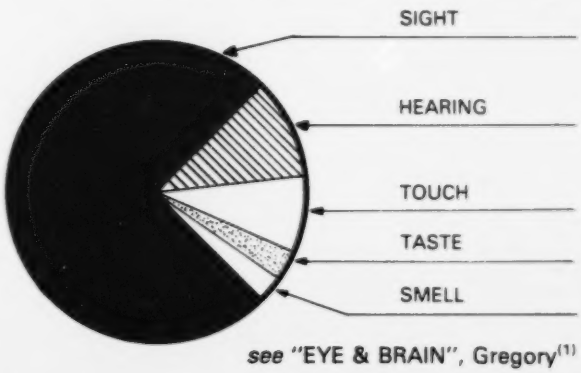
HOW WE LEARN

Whilst some rare instances of learning by inspiration or insight have from time to time been claimed, we all learn through our senses. Of these there are at least a dozen – the principal ones being HEARING, SIGHT, SMELL, TASTE, and TOUCH. To these we can add such sub-senses as cold, hunger, pain, pressure, thirst, and kinaesthesis. The latter can be defined broadly as the sense of body (muscular) movement – an important sense, or combination of senses, at work.

The process by which we come to understand anything goes something like this: stimuli excite the senses which send information along the fibres of our nervous system to the body's control centre – the brain. Here the impulses are interpreted and responses are sent to activate the muscular (motor) system. The senses do not work independently but combine to send unified impulses to the brain – especially when we face complex learning or practical problem-solving situations. From this activity we come to develop further 'senses' – of spatial relationships, for instance, of history, and of aesthetics.

This process in the brain of interpreting what our senses tell us results in PERCEPTION. In all this sensory activity SIGHT is the most powerful and the most critical. It has been said that a blind person usually requires an IQ (intelligence quotient) in excess of 130 to reach 'A' level standard – such being the disadvantage of sight impairment. We all are very dependent on the sense of sight in the perceptual process.

So the eye is, for the teacher, the most powerful inroad to the brain. Also the eye is quicker than the ear, and these two senses combined account for most of our intake of knowledge.



see "EYE & BRAIN", Gregory[1]

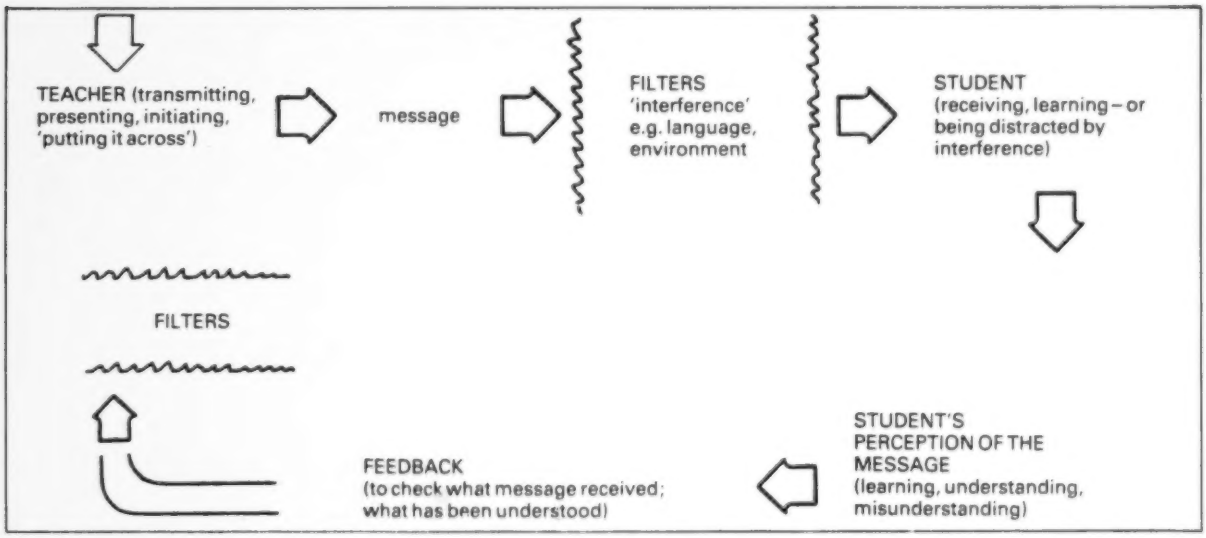
To teach only verbally, therefore, is to under-value and under-use the learner's principal sense. Even more significant is the virtual impossibility of

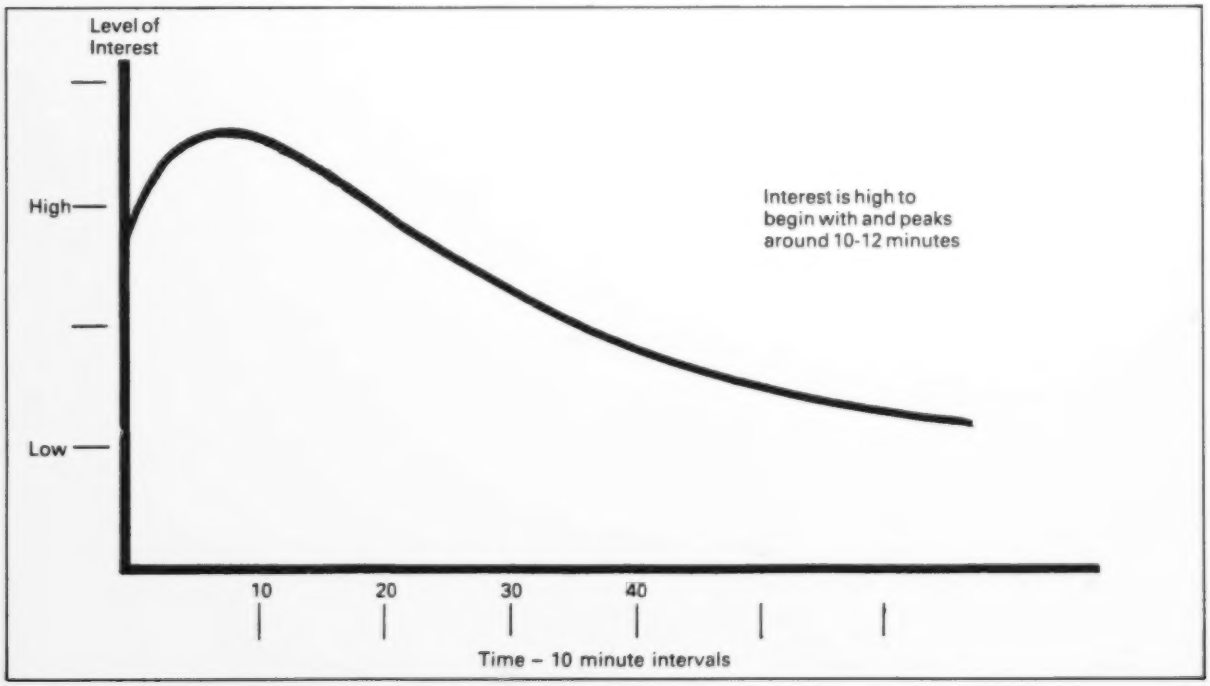
shutting off the sense of sight. The learner's eye is always active, readily attracted by any stimuli or distraction in the teaching situation. The prudent teacher understands this and makes sure that the student's attention is channelled exclusively on the stimulating learning experience.

The perceptive teacher will also constantly be alive to the signs and responses in the students as to whether the message is getting through. The process of teaching and learning can be illustrated thus:

Maintaining the interest of the student is a major factor in good teaching. People generally have a very short attention span, perhaps some ten minutes, depending on initial and developing motivation. It follows that most of the teacher's 'inputs' should seldom exceed ten minutes, each period of 'instruction' to be followed by an activity or participation of some kind. In a typical lesson, students' concentration is high to begin with, and reaches a peak within the first ten minutes.

Attention then flags. A judicious use of different


TEACHER (transmitting, presenting, initiating, 'putting it across')
message
FILTERS 'interference' e.g. language, environment
STUDENT (receiving, learning – or being distracted by interference)
FILTERS
FEEDBACK (to check what message received; what has been understood)
STUDENT'S PERCEPTION OF THE MESSAGE (learning, understanding, misunderstanding)



SPAN OF ATTENTION
OR
INTEREST CURVE

techniques and resource material can hold and develop the students' interest well beyond this initial peak, but periods of straightforward instruction should always be brief.

WHO NEEDS HELP?

Naturally some subjects lend themselves more than others to audio or visual treatment. But the need for resource material in general cannot be determined by the nature of the subject; the use of teaching aids must always be prompted by the needs of the learner. What these needs are will vary from student to student and from group to group. A student of any subject who is habituated to academic, verbal instruction may be able to assimilate concepts and ideas taught in a straightforward lecture. Another student in the same group, with little experience of schooling, and not practised in abstract reasoning, may have real difficulties. The latter needs a more demonstrative form of teaching, whatever the subject. A basic principle in all learning, whatever the level, is to relate the new knowledge to what we already know. If the student does not understand how the new material links up, then it is up to the teacher to find the reason for the gap in understanding. That particular material will have to be re-presented in a more meaningful way. Of course, the learner has to make an effort to learn, but all the same it is the teacher's responsibility to facilitate learning.

CASE STUDY OF A TEACHER

To illustrate how one teacher gradually became more confident in his use of resource material and moved into a position where he could anticipate difficulties and help individual students with problems as they occurred, consider the case of Frank.

Frank is a part-time tutor in coastal navigation. Frank is new to teaching, so he adopts a 'chalk and talk' approach. At first, the only classroom activity is listening, and watching Frank as he writes on the board. But soon Frank begins to become confident enough to erode the passivity of the students by encouraging questions. Then, to save himself tedious chalkboard repetition, he introduces one or two visual aids. One day he finds that some of his sailing-holiday photographs add new interest to his lesson, and he resolves to make efforts to improve his photography and build up a collection of slides. Later he uses a cassette recording of ships' horns, hooters and bell buoys. He discovers he can draw and write over expensive charts and maps without defacing them by the simple expedient of first overlaying a sheet of clear acetate and using soluble felt marker pens and chinagraph pencils.

One evening he lays out a chart on the table and sits the class around it. He realises that the group is too large for one chart and in the next meeting produces two. In the ensuing weeks emerge model boats, buoys, lightships and lighthouses – made in wood, cardboard, plasticene, soap, cork and polystyrene – many constructed by members of the class. Thus Frank has started to bring the students to an active involvement in corporate learning. Now most of the classroom activity centres around group work, with the emphasis on participation and problem solving. Frank has ceased to teach in the conventional sense of the word, yet the enthusiasm, punctuality and constancy of the class, the vigour of the discussions, all indicate a good deal of learning and satisfaction. Of course Frank teaches, but much of his effort is now in the preparation and organisation he does before meeting the class.

A visit to Frank's present class shows that he begins the evening with a review of the answers to problems he has set the class to think over during the preceding week. He is now experienced enough not to be thrown by digressions and is happy to pursue any which are useful to an understanding of the subject. Usually he then divides the class into four groups – changing their composition regularly to discourage cliques and balance individual strengths and weaknesses. To each group he hands a package containing such items as maps, charts, tide-tables, a BBC shipping forecast (perhaps recorded on cassette) together with a worksheet setting out problems to be solved. Frank circulates from group to group, clarifying where necessary and seeing that each member is contributing. He has time to spend with the student who is falling behind or who has missed a session. The last part of the evening is given over to group-reporting and discussion, and a further calculation or navigation problem is posed for students to think about in the coming week. For certain students there may be individual work. Handouts reinforce important points of practice and principle.

Teachers like Frank see resource material not as a threat but as a way of broadening their function in the classroom. Designing, adapting and making this material develops new, stimulating and exciting approaches to their work.

(1) Gregory R. L. *Eye and Brain,* Weidenfeld and Nicholson, 3rd ed., 1977.

2. USING RESOURCES: HOW TO BEGIN

If we are to create stimulating, varied and effective learning situations for our students we must ensure that we are conversant with the wide variety of resources which are available to us. We must then decide which to use; and how, when and where to use it.

WHAT IS AVAILABLE?

The first step is to find out what is available locally.

1. The place where you teach: If this is a centre, college or school you can expect at least some basic items of equipment to be available. If you do not already know, ask what there is and how it can be obtained. Ask, for instance, about overhead projectors, strip and slide projectors, cassette and tape recorders, video recorders and photocopiers. If you do not know how to operate a particular piece of equipment, ask if any tutors' courses are planned where this can be demonstrated. If equipment you would like to use is not available, ask if it can be borrowed from elsewhere. Ask about the room you are allocated: Does it have an adequate power supply? Can it be blacked-out? Are the seating arrangements flexible?

2. The Teachers' Centre: Your local Teachers' Centre, as well as being a possible source of equipment on loan, should have much to offer to the part-time tutor. Although generally geared to the needs of the primary and secondary teacher, as a source of information on how and where to obtain educational materials, charts, films, filmstrips, posters and publishers' and manufacturers' lists, it can be most helpful. It may have a fully-equipped resources workshop where you can make your own material.

3. The library service: Visit your central library. The library service is always willing to offer useful help and advice, both to students and tutors. In larger libraries you will often find record and tape collections, photocopying facilities, and specialist staff who can probably suggest other lines of enquiry. Your local librarian will often be willing to arrange exhibitions of books as a part of your course, and may be able to provide space for exhibitions of students' work.

A resources workshop

A CHECKLIST OF RESOURCE MATERIAL

VISUAL AIDS

1. Forms of presenting information:

Books	Pictures	Reproductions
Handouts	Photographs	Graphs
Worksheets	Drawings	Barcharts
Notes	Slides	Histograms
Briefs	Loops	Computer graphics
Illustrations	Films	
Charts	Filmstrips	
Diagrams	Videos	etc etc

2. Equipment for presenting information:

Boards –	Projectors –	Duplicators
Chalk	Overhead	Photocopiers
Magnetic	Episcope	Television sets
Teazle	Film	Visual display units
Plastigraph	Slide	
Felt/	Loop	
flannel/lint	Video	etc etc

AUDILE AIDS

Natural sound	Tapes	Radio
Records	Cassettes	

TACTILE AIDS

This would include anything students can touch – specimens; models, sectional or working.

BROADCAST MATERIAL

PEOPLE

Don't forget people are resources. The teacher is an essential aid to organised learning, and the teacher's knowledge, methods, styles and techniques are subsidiary aids. And in adult groups there are the students, with their collective and individual experience, maturity and expertise – a very rich resource, waiting to be used.

4. Organisations related to your subject: If you are in touch with organisations related to your particular subject they can frequently provide useful source material. For instance, local and regional Arts Associations may be able to loan equipment as well as providing information. The Crafts Council has slide packs and a film and video hire service. Tutors often tend to work in isolation: see if you can arrange to meet other tutors teaching your subject as there are considerable advantages in pooling ideas on resources and curriculum.

5. Broadcast material: An enormous amount of educational material is broadcast regularly by the BBC, the various Independent stations, and Channel 4. Still more is available on cassette, video and film. Contact the broadcasting organisations for information about forthcoming series, and borrowing facilities.

Note: Be sure you understand the copyright regulations on any material you want to use (see page 38). This is important.

DESIGNING YOUR COURSE

With this background information, you are now in a position to make a detailed plan of your course, considering where the available resource material would be most useful to you. In general, it is a good idea to keep in mind 'the four Ps', Planning, Preparation, Presentation, Post-mortem.

Planning
- analysing the process
- anticipating the difficulties
- building up the demonstration as a logical sequence

Preparation
- collecting the tools and materials
- making or obtaining the aids
- making ready the venue

Presentation
- marrying words with actions, speaking clearly
- selecting the speed to suit your students and making sure they can all see
- not overwhelming with expertise

Post-mortem
- after you have finished, evaluating what you have done
- making notes of changes for next time

These are the four basic steps in designing courses, sessions and indeed all materials and activities related to learning.*

The whole process, however, begins with defining aims and objectives:

WHERE ARE YOU GOING? (aims and objectives)
HOW ARE YOU GOING TO GET THERE? (methods, combinations of methods, resource materials, equipment, etc.)
HOW DO YOU KNOW WHEN YOU'VE ARRIVED? (feedback, assessment, evaluation)

When you have decided what piece of information you want to get over in a particular session, then you must ask yourself what method or methods you are going to use. Of course a complicated piece of resource material is not necessarily the best technique on every occasion – a discussion might be more appropriate at that particular point. Derek Oliver (Head of the In-Service Unit at Blackpool and Fylde College of Further Education) suggests a useful problem-centred approach to teaching aids and identifies four types of problem likely to be 'receptive' to a learning-aid solution:

A. Problems arising from SUBJECT MATTER:
- A1 Complexity of subject matter
- A2 Abstractness of new idea to be learned
- A3 Difficulty in visual access
- A4 Absence of the 'real thing'
- A5 Volume of new information etc.

B. Problems arising from the LEARNING PROCESS:
- B1 Giving emphasis to key task features
- B2 Stimulating involvement in learning
- B3 Providing prompts to aid practice
- B4 Diagnosis of errors and provision of feedback
- B5 Stimulating revision/summaries etc.

C. Problems arising from CONSTRAINTS:
- C1 Ensuring visual access for all
- C2 Mixed ability groupings
- C3 Limited/poor text books
- C4 Encouragement of distance learning
- C5 Limited teaching time etc.

D. Problems arising from MEETING EDUCATIONAL NEEDS:
- D1 Need to encourage information retrieval skills
- D2 Need to encourage problem solving skills
- D3 Need to encourage reporting skills
- D4 Need to provide opportunities for transfer of learning to new situations
- D5 Need to provide opportunity for team work.

(Derek E. Oliver, 1980)

* Stock A., Bestwick, D. and Gray, R. (1978), *Teaching Adults-New Series, Adult Teaching Methods*, NIACE, Leicester.

ALSA

A PROCESS FLOW-CHART TO ASSIST IN DESIGNING AND DEVELOPING TEACHING AND LEARNING MATERIALS

BEFORE YOU START TO CONSTRUCT

1. ANALYSE THE PROBLEM (use Derek Oliver's categories) – what is the communication problem or challenge?
   e.g. is it the need: to illuminate, simplify, condense, provide meaningful imagery, provide order to the subject/data, extend the subject, expedite/increase assimilation of subject matter, emphasise?

2. QUESTION YOUR TEACHING METHODS – are they the most appropriate – 'Are there other ways in which I can teach this point/lesson?'

3. ESTABLISH THE NEED FOR THE AID
   What is its purpose, what must it achieve?
   Where does it logically fit in?

4. WHAT RESOURCES DO I NEED TO SHAPE THE AID(s)?
   e.g. data, accurate/authentic information, research, books, people, processes and processing, media time, space, finance, components etc.

5. IDENTIFY HYPOTHESIS – set a precise aim and its objectives – a reason or justification for the material – 'Why I am doing this!'

6. PREPARE EVERYTHING – research if the topic already has been covered by someone else (don't re-invent the wheel!) Can it be used as it stands – does it fit my needs – does it require modification(s)? Where do I get the ingredients, the materials, the facilities with which to make the aids? What time will it take, How much will it cost, etc.? Will it be worth the effort – earn its keep? Getting it all together.

WHEN THE WORK IS IN PROGRESS

7. KEEP ANALYSING as you gather and put together the ingredients. New insights will occur as you prepare and develop your materials SO BE PREPARED TO AMEND YOUR OBJECTIVE(S).

8. EXPERIMENT – trying out different applications, configurations of the elements of the aid as well as the shape, size, layout, graphics and sequence. KEEP going back to the problem you are wishing to solve – drawing conclusions about your proposed solutions-in-the-making. 'This is the problem and this is the answer I see for it'.

9. PRESENT THE DEVELOPING AID at its various stages – test it on a colleague – discuss its effectiveness and value as a 'message'. Be ready to amend or even discard if it is not likely to do its intended job well.

10. USE IT! Try it out in various ways.

11. EVALUATE – Does it work? How do you feel about it? What did the students make of it? Try to measure the effectiveness of it. Was it worth the effort? Was it worth using?

12. RETHINK – how can it be improved – in part?
    - should it be discarded?
    - were your objectives valid in the first place?
    - if they were, yet the aid doesn't quite meet the need – is there another way, or another method?

3. VISUAL PRESENTATION AND DISPLAY

It is a very rare teacher who is not involved to some extent at least in the art of visual presentation. Visual resource material – what you make or what you buy – should be clear, uncluttered and unambiguous. The aim is to help, not to hinder, learning. There is an economy in good visual material, not merely in the time and cost taken to produce it, but especially in the speed with which the message is delivered and can be assimilated.

This section of the handbook looks at various ways in which you might present graphic material to your class. It looks at basic lettering and drawing techniques, and it concentrates on the more traditional, and most commonly used, visual aids – chalkboards and pinboards, charts and posters, and material prepared for display in other forms. The next section, on reprographics, looks at ways of producing multiple copies of whatever you have designed; the following section, on projection, discusses enlarging the material: there is, of course, a considerable overlap in these areas, and a certain amount of cross-referencing is inevitable.

LETTERING TECHNIQUES

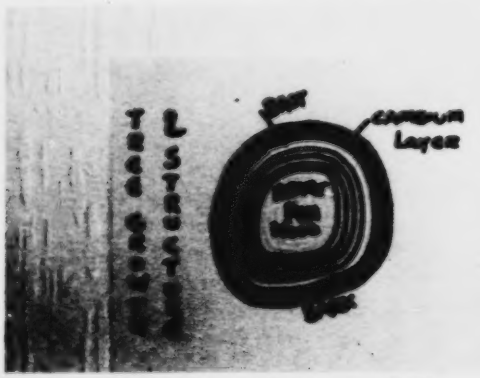
Lettering is important. Remember we are aiming essentially at *clarity*. Therefore our writing should be simple, precise and clear. Upper-case (capital) lettering has its place in, say, titles, and for emphasis in captions, but lower-case (small) lettering should be our main form. For example, if you are driving along the motorway to Canterbury you would be able to see the word 'Canterbury' sooner than the individual letters which make up the word – simply because from a distance you recognise the shape of the word. Lower-case lettering has more shape, and therefore more interest for the eye.

CANTERBURY

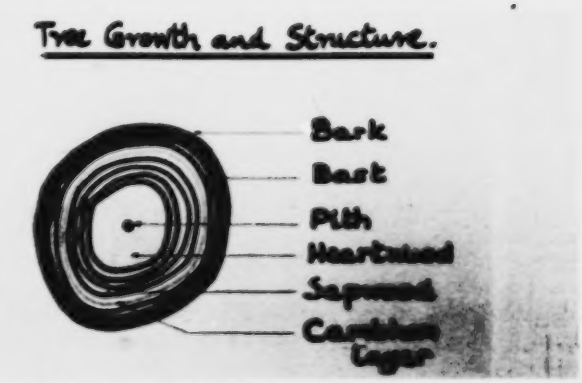
Canterbury

Words are recognised by the visual pattern created by the letters themselves and the shapes of the spaces in between. If we distort the letters, space them badly or arrange them vertically we

limit limit GOLF GOLF



Wrong – cluttered, crowded, vague (left)



Right – neat and clear

[L]

'The best leader does not persuade men to follow his will. He shows them what it is necessary for them to do in order to meet their responsibility, a responsibility which has been explicitly defined to them. Such a leader is not one who wishes to do people's thinking for them, but one who trains them to think for themselves'.

Follett

[R]

'THE BEST LEADER DOES NOT PERSUADE MEN TO FOLLOW HIS WILL. HE SHOWS THEM WHAT IT IS NECESSARY FOR THEM TO DO IN ORDER TO MEET THEIR RESPONSIBILITY, A RESPONSIBILITY WHICH HAS BEEN EXPLICITLY DEFINED TO THEM. SUCH A LEADER IS NOT ONE WHO WISHES TO DO PEOPLE'S THINKING FOR THEM, BUT ONE WHO TRAINS THEM TO THINK FOR THEMSELVES'.

FOLLETT

Lowercase lettering [L] is less monotonous and reads more easily than upper-case lettering [R].

make the words difficult to recognise. If it is essential to place lettering vertically, then place it sideways. As far as possible, keep any lettering *simple, clear* and *readable*. Vary the size of the words or lines of lettering according to their importance. Use larger lettering for titles than for captions and do not clutter the area with unnecessary lettering. Try to keep captions off diagrams – use lines and arrowheads and avoid keys or legends. Take particular care to space your letters and words correctly. In letter spacing we rely mainly on visual spacing but in word spacing the width of the letter 'O' between words will generally suffice.

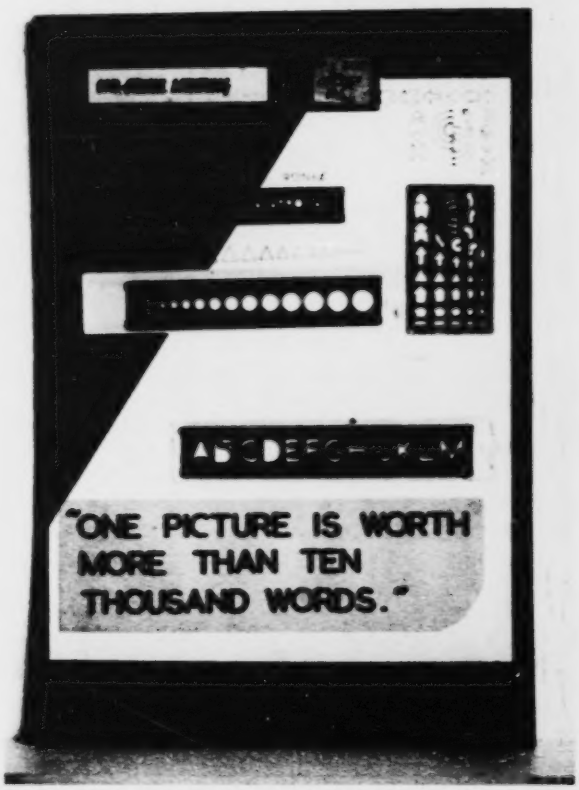
Often, a serious distraction can be captions of a poor quality or lettering done in shaky, undisciplined freehand. Often, too, a clear but not artistically composed or executed poster or chart can make an almost professional and attractive impact simply by its finish in good neat lettering. In the past, the job of lettering was the exclusive and unchallenged province of the skilled graphic artist. Now, however, modern and simplified lettering devices and techniques have evolved and proliferated to a high degree of facility and availability; and the layman has within his grasp unlimited opportunities for producing, by simple and cheap mechanical means, all manner of expert lettering.

For those who feel their lettering skills are less than perfect, all is not lost. Firstly, practice can lead to a world of improvement; secondly, there is a wide range of devices bringing help to hand.

Stencils

Still the cheapest and perhaps best known lettering device is the stencil punched out in card (see top right of photograph), such as the 'Butterfly' brand made by Samuel Jones & Co. Ltd. Several sets are available, in differing sizes and in upper and lower case and numerals. They remain the cheapest. Similar types punched in plastic are also available from stationers' shops. Used with coloured felt pens, an excellent type of lettering results. Sharper relief ensues if, before lifting the stencil, one scribes the perimeter of the letter with a fine point biro or felt pen.

The Econasign Co. Ltd. produces a range of stencils in a variety of sizes and styles. The lettering is applied by brush in a limited range of colours, but producing a finish which, with only a little skill, is as good as printed material.



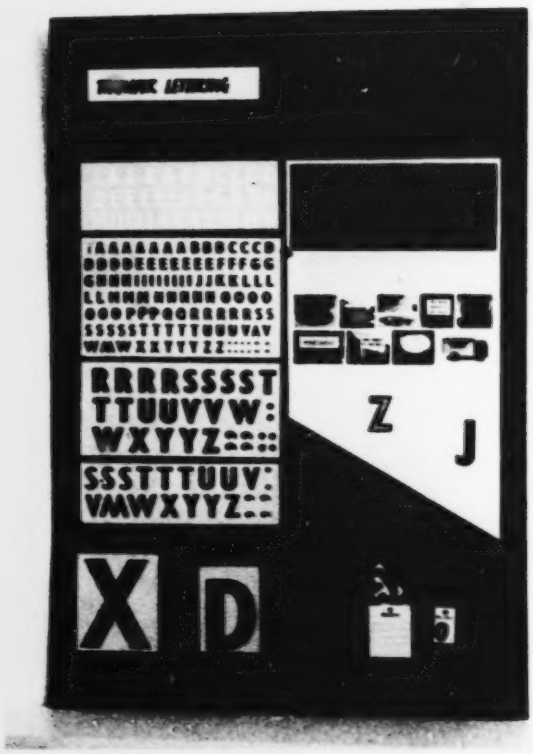
Stencils and templates make first-class lettering an easy job.

Somewhat more expensive, yet extremely accurate, durable and well designed are ink stencils such as the 'UNO' or 'Standardgraph' or 'Rotring' series, originally designed for draughtsmen and architects. These are a life-long investment. Expertise in their use is swift and easy and there is an infinite variety of sizes, types of lettering (i.e. upright, sloping shadow) in upper, lower case

and numerals. Extra large sizes for use with marker pens are available. Language teachers may care to note that the range of lettering characters includes Arabic, Russian, Greek, Gaelic – even Swabian and Mainz Gothic! For others there are stencils/templates for architecture, physics, mathematics, radio, electronics, engineering, hydraulics, chemistry, navigation, and many many more!

With such a vast range from which to choose, consider the range and merits of every purchase you make – but first make sure that your centre or college doesn't have a set available on loan. If buying, then begin with the size most useful to you – say 1" or 2" which are contrasting sizes. Invest in a good cleaning fluid to keep your pens clean – and remember, when using any lettering device, to work to lightly-pencilled guide-lines.

Dry transfer lettering



In graphics perhaps the biggest boon has been the arrival of dry transfer lettering devices such as 'Letraset', 'Letterpress', 'Blick', 'Dry-Print' etc. The range of type-faces and sizes is enormous, available in black, white and gold. The whole range of every conceivable symbol is there including a wide range of visual images – trees, cars, people, leisure and sporting scenes, and many more which are very useful for making up pictographs (see page 16). The lettering is also produced in opaque colours for overhead projector transparencies.

Fixing these symbols to your aid is a truly simple task. Remove the backing paper and place the selected letter into position by aligning its guide-line with yours. Burnish the letter with a ball-point pen or spatula and it transfers to your paper or card. Follow up by placing the backing paper over the completed word and burnish with the spatula or spoon to ensure full adhesion. Mistakes can be easily removed by carefully placing Sellotape on the letter you wish to remove. Use a spray fixative to seal the letters (as well as the whole poster if you wish). For an aid that will be constantly in use it might be wise to cover the whole in transparent self-adhesive plastic.

Since there is such a vast range of lettering to choose from take care to choose a type face that will be suitable for more than one purpose so that left-overs are not wasted. These letters come in singles and in sheets. Do not aim at too wide a range since you can end up with a plethora of unmatching styles and sizes.

It is often wise to make your captions on separate strips of card (use contrasting colours too) and these can then be stuck to the aid. In this way a spelling mistake doesn't spoil the whole work. One final point: sometimes in applying the larger letters small cracks can show on the finished piece (often the result of uneven pressure when burnishing). These can be filled in with a felt pen.

It will pay to find out if your college or centre has a line Letraset machine – either the simple hand-operated wheel and tape or the up-to-date keyboard and memory 'Kroy 80'. Either will allow you a range of type faces.

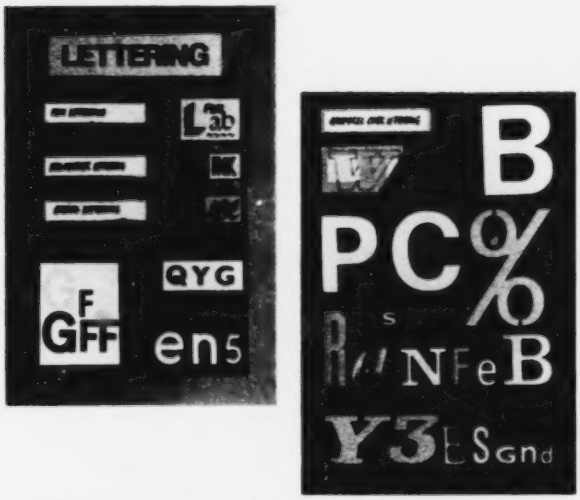
Letraset machine.

Other lettering devices

There is an inexhaustible range of lettering devices – either for use direct or as templates (e.g. for polystyrene cutting).

A full range of cork and cork-based letters and symbols are made by Graforel. They also

make letters in perspex, plywood, polystyrene and self-adhesive vinyl (in colours) – see upper right corner of photograph. Allan Bros, Patents, produce several noteworthy types of lettering: 'Alphapeg' and 'Numapeg' for pegboard use (includes symbols, plates, and many notice-board devices, all in colours); 'Burleta', a velcro-type backed lettering for use on flannelboards and other fabric surfaces; 'Magleta' is the same range but instead with magnetic backs for use on metal surfaces; 'Alphafoam', a tacky-backed lettering cut in foam rubber and faced in coloured vinyl; and lettering with pin-backs for use on soft wallboards (see third line of photograph).



Lettering devices for poster and chart-making.

Children's toy letters often provide an adequate and cheap form of lettering. The 'Butterfly' brand is an example – letters and numerals in coloured self-adhesive cardboard. Primary schools invariably carry sets of plywood letters in clear, simple forms. These make excellent templates or can be backed with magnets or 'Velcro'.

W. H. Brady & Co. Ltd produce a self-adhesive vinyl lettering called 'Quik-Align'. This clever series is made to interlock and the correct SPACING ensues. 'Kwik-Space' by Decorettes Ltd is a similar form of instant lettering, self spacing.

Letraset produce 'Letrasign' in a wide range of sizes, colours and typefaces which is suitable for exterior (all weather) signs as well.

THE CHALKBOARD

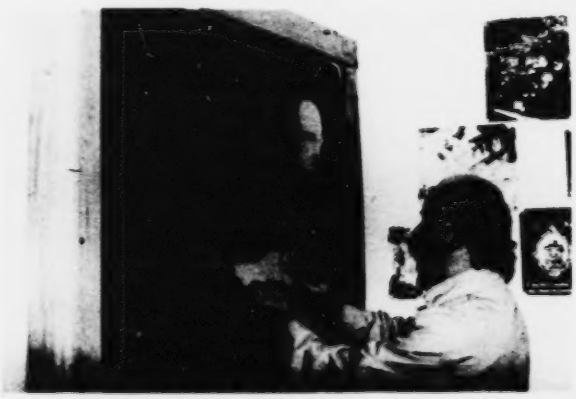
The chalkboard, once black, but now available in several colours has long been the basic tool of the teacher. It still remains an important aid, since it is convenient and cheap to use.

Its technology continues to advance from the original board and easel – still in use – through teaching walls, sliding panels, revolving boards (some of which are metal-backed for use as magnetic boards), to inboards (which function as screens, allowing us to write onto a projected image) and to lighted perspex panels. The latter, lighted by fluorescent tubes, give the illusion that the chalk-work stands out forward from the board itself. As in most things, technology leads us to new and exciting ways of presenting data, but the basic principles remain constant.

If only to shatter the mystique which surrounds the use of the chalkboard, it should be stressed that chalkboard competence is *acquired*. The trouble is that most part-time teachers seldom have sufficient access to a chalkboard to practice and develop this skill. At the other end of the spectrum, our more academic colleagues may underestimate the importance of good board work and are therefore not prepared to practise. Those wishing to become skilled should consider the following points:

Preparation. If timetabling allows get into the classroom early to prepare chalkboard diagrams and summaries before the class arrives. White chalk on a black board is no longer considered the best contrast. Yellow is better. Our motorway systems are signposted white on blue, in lower-case lettering – a combination which seems to be most effective.

Drawing. If you need to draw as well as write, templates can be useful, especially if a particular outline is a recurring feature in your teaching. Outline shapes (perhaps taken from a magazine) can be cut from card, or bought in plywood, metal or plastic. The photograph shows such a template with something added: first the picture of the car was pasted onto card, cut out, then the body lines of the car on the actual picture were pricked at half-inch intervals with a pin So, in addition to giving the outline shape of the car, by tapping the

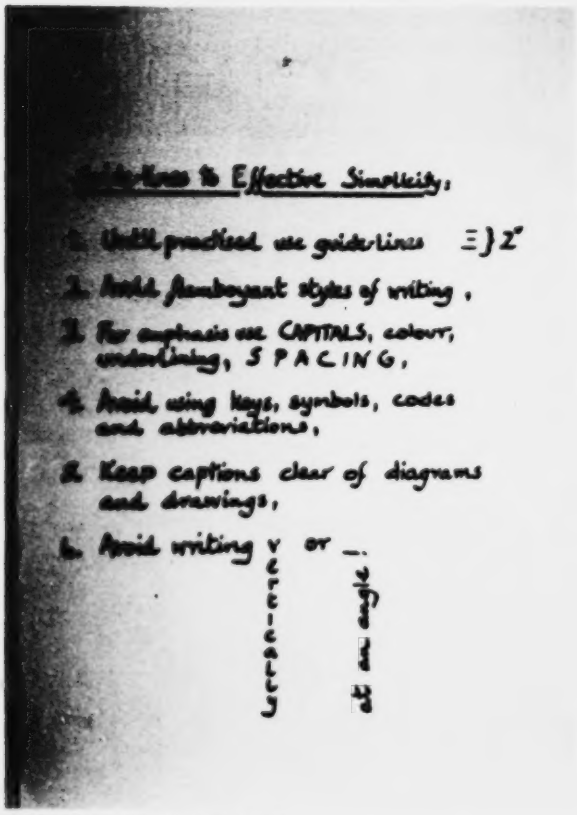


Using of a template with interior outlines pricked out saves time and ensures a constant outline

template all over with a chalkboard duster, the detailed bodylines are dotted with chalkdust; joining these up is simple.

Another use of the template is to draw the outline in HB pencil. This enables you to draw the shape in front of the class when the appropriate time in the lesson comes.

Cleaning. Begin by cleaning the board thoroughly with the duster, then dust it with a clean cloth. Moving the cloth horizontally from side to side gives the board a neat aspect of the newly-mown lawn. DO NOT wet the board. This malpractice, repeated often enough, will give the board a glazed surface from which the chalk will slip. Dustless chalk helps here. Boards really should be re-textured regularly, in consultation with the makers.



Rules for clear board work

Writing. Writing should be simple and clear. Writing in straight lines on a board comes only with practice. Until skilled, draw light guide-lines with a very soft (HB) pencil. The size of letter for the average classroom is approximately two inches, so draw in an upper, lower and middle line appropriately. Ideally, the position of the chalk for writing seems to be at one's own eye-level, with the fore-arm at right angles to the body. Chalk-writing is a *bodily* movement, so use the whole arm, not just the wrist. This means that one moves bodily with the chalk from left to right, moving the board up as each line is complete. Thus on a rigid board we may be required to start standing on a chair, then on tip-toes, and possibly ending in a kneeling position. Revolving boards make the task simple.

The natural writing position with the line at eye-level

Timing and testing. If it is possible to prepare your chalk-board work before your students arrive, it is a good idea to cover it in some way until you come to the point in the lesson where you need to use it. Sheets of paper can be attached to the board with Plastitak, Blu-tak, Buddies or something similar, or two-sided tape. Teaching points on show too early in a lesson often distract the student. And again, if you can, take the opportunity to test your work by looking at it from the back of the room. And – an obvious point but often forgotten – when you are referring to the board, be sure not to stand in front of it. Keep to one side, and use a pointer if necessary. Finally – try to leave the board as you would wish to find it. Clean.

Inkboards and whiteboards

Inkboards seem the innovation most likely to displace chalkboards. Most of them, besides being dustless, with their white or off-white matt plastic surfaces, serve readily as screens for film and slide projection. More recent inkboards incorporate a metal underlining which enables them to be used as magnetic boards. A word of warning in using them: only felt-tip or markers containing detergent-based inks should be used since spirit or oil-based inks leave a stain. Use only those pens recommended by the maker.

Some boards recommend use with 'Dry-Wipe' pens. These write 'wet'; the solvent which carries the colour pigment evaporates leaving a powder which can be wiped off with a dry cloth. The solvent in 'Dry-Wipe' pens (and in some spirit-based board-writers) causes an allergic

(asthmatic) reaction in some people. It is best to avoid them, or use in a well-ventilated room.

Water-based, detergent-based or 'Dry-Wipe' inks will leave a 'shadow' image if left on for any length of time. It is best to clean the board immediately after use.

FLIP-CHARTS

If you wish to retain your board work for further reference you can use flip-charts in the same way. It can be an expensive way to use paper, and your boardwork is not instantly correctable, as with chalkboard or ink/white board. You can overcome this to some extent by preparing basic material, such as a map outline or a diagram, on the flip chart, and using a transparent overlay to write the 'variable' material on, using overhead projector pens. (See Flap sequences, p 18). If you are planning to use this process regularly, it is probably better in the long run to prepare a more substantial chart.

MAKING CHARTS

The chart may take many forms and offers considerable scope to the imaginative and resourceful teacher. Above all, the chart should convey something which is otherwise difficult to illustrate. It should, therefore, be *simple, attractive, clear* and *relevant*. Certain basic points to consider:

(1) How will the chart be used – by an individual student, a small group, or the whole group? Are you going to enlarge or project it? This will affect the size of the chart itself, the size of any illustrations or diagrams and the size of any lettering used.

(2) How long will the chart be used – one meeting, a series of meetings or, perhaps, a few minutes? This will affect the *time* you will be prepared to spend making the chart, the *cost* of the material used and the *durability* of the chart itself.

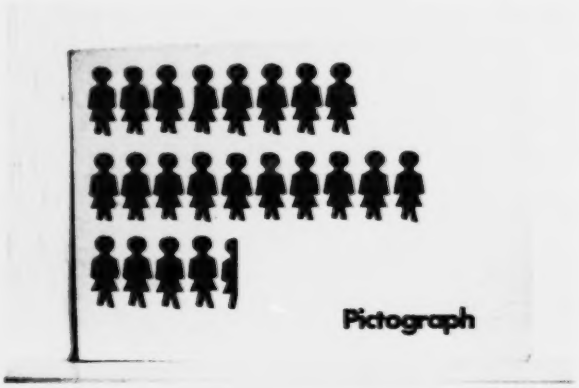
(3) Are the materials you require available? Assemble all you need before you begin.

(4) Are the materials to be used in making the chart within the scope of your own skills?

Apart from the more conventional type of chart, generally used to illustrate or reinforce a single point or topic, there are many variations which can be developed to meet the particular needs of the situation. The following examples give an indication of the versatility of the chart (and see also the section on Originals for Reprographics on p 28).

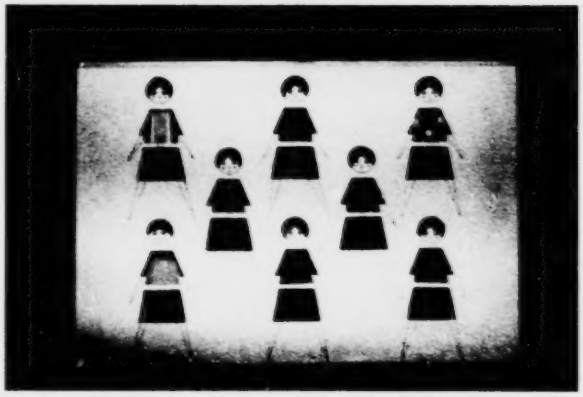
Pictographs

A teacher presenting information verbally on comparative population figures is able to make the comparisons more meaningful and understandable by the use of a simple *pictograph*. In pictographs you should relate the symbol to the subject, e.g. for housing statistics use a simple house as the symbol; for, say, forestry use the tree; for civil servants – tea-cups! Different colours can account for any declared unit – ones, tens, thousands etc.



Charts for comparing or contrasting

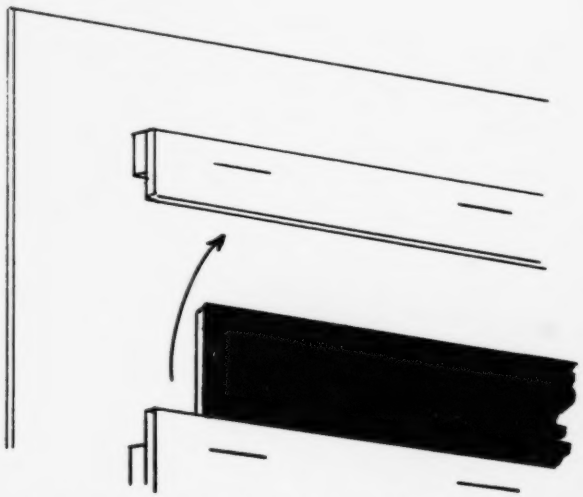
Much of our teaching begins with our evoking situations in the students' minds. Often, however, we make the mistake of assuming that teacher and students give the same meaning to the points being discussed. When imparting any knowledge that might in the slightest way be subject to diverse interpretation, the teacher must ensure that the correct associations are clearly made.



An unimaginative teacher of dress, for example, might attempt to treat a comparison of textures in a purely verbal manner; or perhaps she would pass around a book of fabric and colour samples, asking the class to leaf through and select items for comparison or matching. An imaginative teacher, however, will attempt to lay before the class the whole range of possibilities by breaking

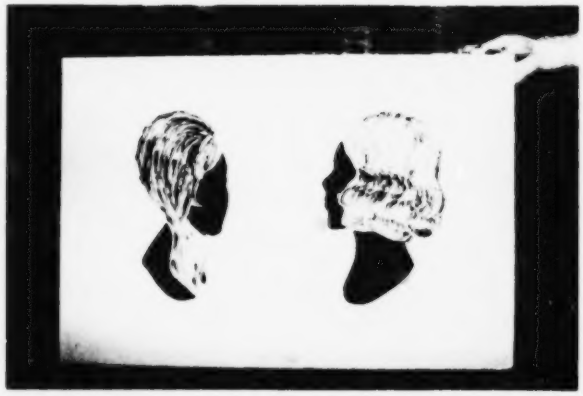
down the book and laying out all items for immediate all-round comparison and contrasting. Thus, learning is made easier and time is saved. This can be done by mounting the items on card and facing this with a card cut into a window effect.

The illustration shows one way in which the theory of colour and design might be approached: 'Which way should the stripes run?' Here, the cut-out window follows the line of the dress. To the reverse of this window are glued, or stapled, two rebated tracks made from thin strips of card. The sample of fabrics, colours, patterns or whatever are stretched, glued or stapled to oblongs of card which are measured and cut to slide into these tracks. Thus one can have sets of interchangeable items for comparison.

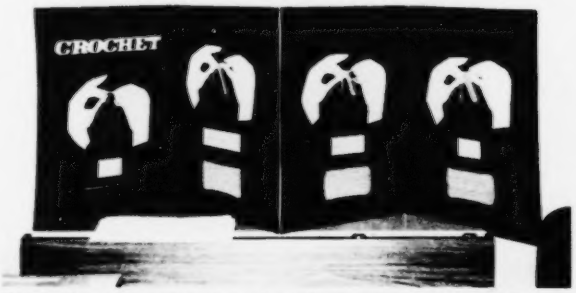


The tracks hold the material in place at the back of the poster

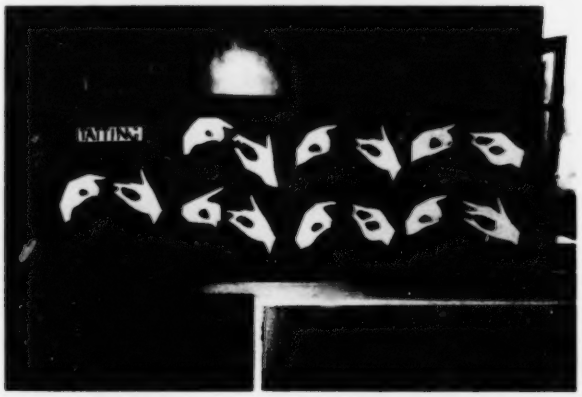
Most subjects present the teacher with recurring themes. The illustration shows one way in which a teacher of hairdressing might discuss styling. The human head is the recurring theme, and this is cut from card or drawn in ink, in full and three-quarters profile. A minute piece of Velcro is stapled to the head, its opposite to each mountable hair style.



Charts showing a sequence of movements



Enlarging the parts. A series of progressive hand, finger movements involved in one complete crochet stitch. Note that actual wool and hooks are incorporated.



If you have access to an episcope (see p 45), diagrams, illustrations and drawings can be enlarged by projecting an image onto card or paper fixed to a wall. By simply tracing the projected lines using a pencil or felt pen, the image can be reproduced to a larger scale.

Flap sequences

Without denigrating the excellent graphic and artistic quality of many commercially produced charts and teaching aids, a common mistake is that of cramming far too much on to one sheet. Confronting a class with a highly detailed, intricate chart – especially if the subject is complex – can bewilder and frighten students; and in adult teaching there is nothing more calculated to inhibit learning. If you must use such charts for teaching then consider blanking out with sheets of paper any unnecessary items or sections of secondary importance; expose these later, when the fundamentals have been understood.

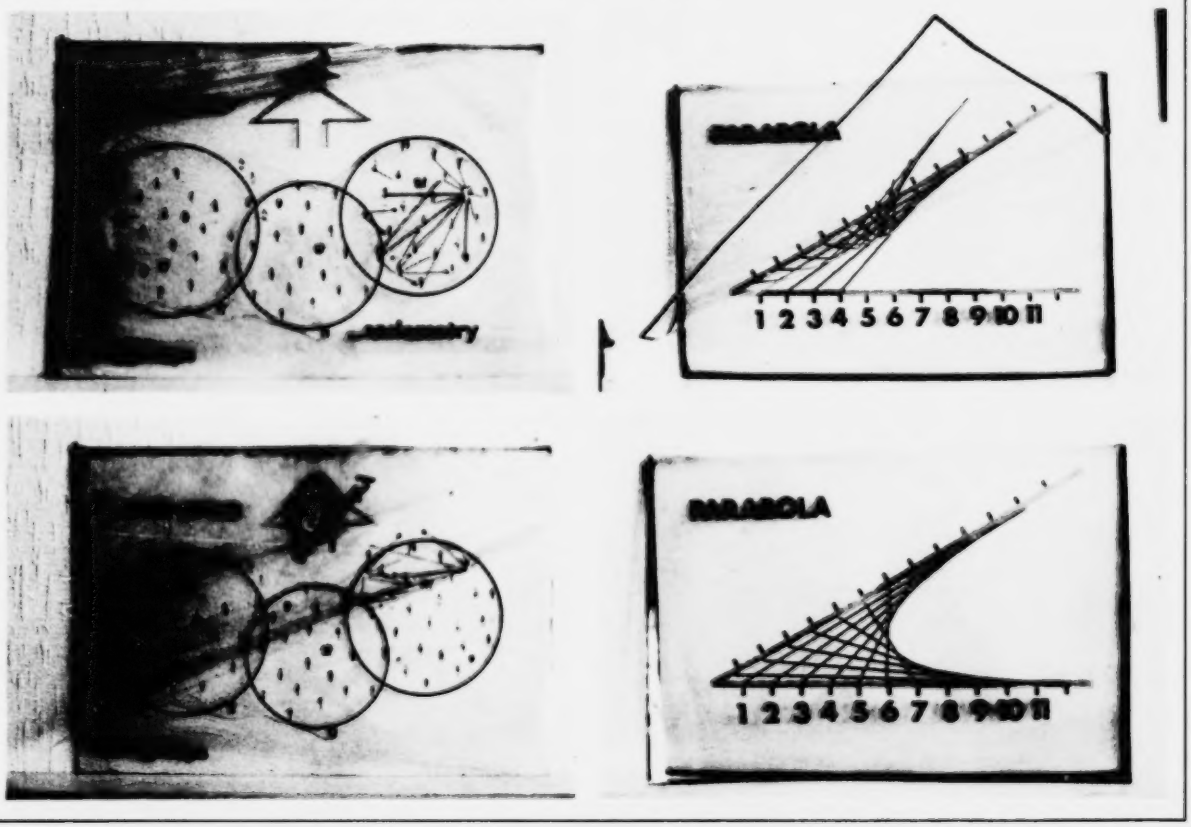
Perhaps a better way in which to treat the presentation of complicated ideas, systems and processes is to order the data into a flap-sequence. For example, a woodwork teacher could deal with the making of a joint thus: flap 1 – marking out the joint; flap 2 – gauging and scribing; flap 3 – sawing and chiselling; flap 4 – easing and fitting the joint; flap 5 – examples of poor fitting; flap 6 – varied uses to which joints can be put.

In a jewellery-making course the teacher may face a similar problem of presenting information about fairly detailed and small objects to a group of students. In this case the teacher has identified the various stages leading to the finished product. By enlarging and simplifying these stages, using a flap sequence, the students are able to recognise the sequence and development of the processes involved more readily than if only a verbal description was given.

Thus a flap-sequence, basically, consists of several sheets of paper dealing progressively with the breakdown or development of an idea, theme, variations or processes. Flap-sequences are useful also as a follow-up ready-reference for students later in the lessons or the course. They afford the means of familiarising students with the wider implications and possibilities of what they are doing – a vital factor in developing the right critical outlook.

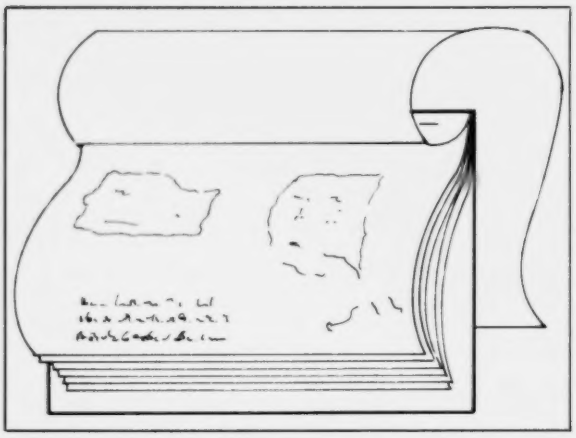
Making a flap-sequence is simple. The sheets can be numbered, if desired, and taped, laced or stapled together along the top edge. For rigidity when storing it is best to mount the flap-sequence on a sheet of card. Plastic spines are available from most stationers. These come in a variety of sizes and colours and can be fixed in seconds. They give the advantage of enabling you to separate the flap-sequence, and to add and extract items without tearing. Sellotape tends to go brittle and to

These are the stages of a flap sequence built up with acetate sheets



crack with age. One can proceed and re-tape when the need arises – two/three years is about the life of ordinary Sellotape. Plastic packing tape is heavier and more robust and with carpet or masking tape, retains its adhesion and its flexibility.

Flap-sequences using transparent overlays



This is something of a flap-sequence in reversal! The lesson begins with the rigid backing sheet as sheet one. The flaps are of transparent plastic and are, one by one, turned over on top of the backing sheet to add further details without obliterating the basic diagram or picture. Many of the tapes, shapes and lettering devices which have been mentioned can be used in making this aid – all are compatible for use on a plastic surface. The basic background chart is made up from cut-out card. A plastic spine or Sellotape will provide an adequate binding for the top edge – but tape the edge on both sides.

POSTERS

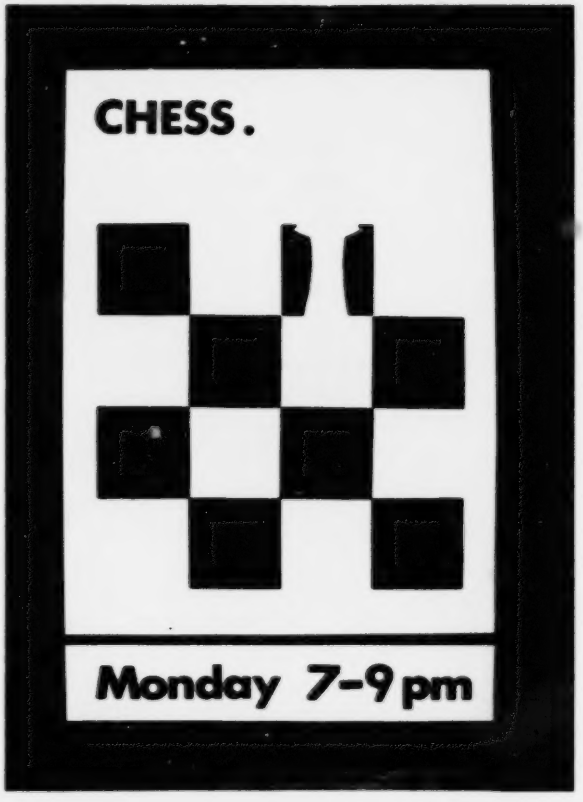
The key to a good poster is simplicity, impact and its ability to convey its message in a very short space of time.

The interior poster advertising a chess class is made up simply of black squares cut from paper or card, glued to a white sheet and with a chessman superimposed in red card, the outline of which was culled from a magazine. Dry transfer lettering provides the captions and – note the economy – in three words the message is explicit, unequivocal and attractive. The poster has not been cluttered with trivial details, and something is left to the imagination.

Similar treatment for every subject is apparent. For say, bridge, a small square of self-adhesive green felt-baize on light card, in turn mounted by four 'hands' of playing cards taken from an old, incomplete pack; for woodwork, a piece of wood-grain wallpaper with black or white dry transfer lettering on contrasting strip; for dress-making, the components of any simple dress pattern miniaturised, cut out in card and glued to a contrasting background and so on. It is such simple treatment which epitomises good chart and poster design, whatever the content or purpose.

Colour is often a matter of personal choice. Avoid, as far as possible, using the primary colours – red, yellow, blue – with equal or large areas of their complementary colours; red with green, yellow with purple, blue with orange. *Small* amounts of these complementary colours can, however, be used effectively to draw attention to key areas. We can also attract attention by placing titles, captions or diagrams on a different tone colour of card from that used for the background. In general, try to avoid large areas of vivid colour. Whilst these may well attract the eye they can sometimes detract from the real purpose of the chart, poster or display.

In using colour we must be aware of different tonal values – the relationship between the degree of lightness or darkness of the colours we use. This can be demonstrated by looking at a black and white photograph where only the tonal values of the various colours are recorded. These tonal values must be taken into account in order to ensure that one area of colour stands out from the next.



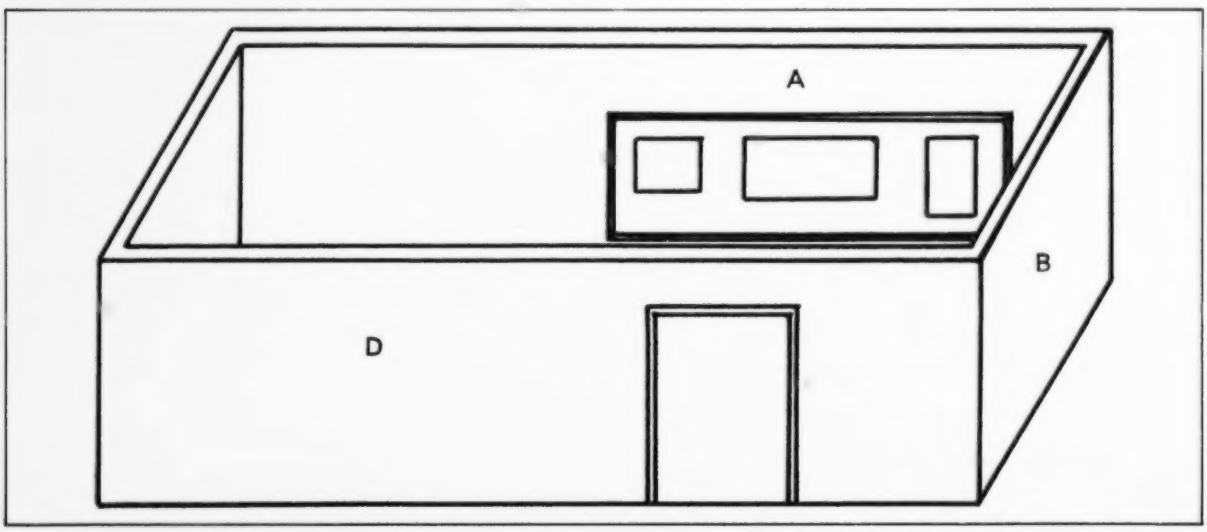
SIX POINT SUMMARY

ACCURACY	Avoid mistakes in content and spelling – avoid too many details.
BREVITY	Avoid excessive verbiage – keep all captions brief. Economy of word and line is the hallmark of a good aid. Avoid distracting backgrounds. Keep all detail simple and central. Aim always for neatness, coordination and imagination.
CLARITY	Make the main points in the aid the most obvious. Do this by using largest, most vivid lettering for the salient points. Remember – one chart, one overhead transparency – or whatever – for one idea. If you wish to convey more than one idea then you require a series sequence e.g. a flap-sequence.
DELETION	Once it has served its purpose, put the aid away. There is really no such thing as a permanent aid – its relevance and impact changes, as do the students' needs and the teacher's perception of those needs. We must assume that nothing is static in good teaching. Resource material should be fresh, dynamic, not fossils of some bygone lesson.
EMPHASIS	Emphasise essential points which the students *must* know; to a lesser degree those which they *should* know; and to a still lesser degree those which they *might* know. These degrees imply points of emphasis and priority. In a particular chart or overhead projector transparency, the most pertinent features should be made the most prominent, either by position or size. In the case of a small picture which needs to take precedence over a larger one the problem of emphasis might best be overcome simply by mounting the smaller onto a larger and more colourful piece of card. Go even further and block-mount it onto ¾ inch polystyrene so that it is given a three-dimensional effect.
FEEDBACK	We must continually assess whether our resources and methods are achieving the ends for which they were planned. Does the student's perception match ours? Does the resource material leave us sharing the same idea? If not, then it needs to be amended or removed altogether.

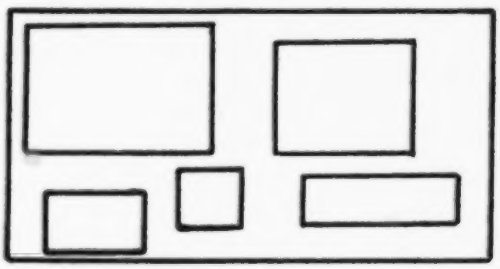
DISPLAY BOARDS

The location of a fixed board in a building should logically be in the place where it will attract the attention of most people – where it is most difficult to escape notice. In a room, the wall opposite the doorway seems to be the most useful position. Thus, in the illustration, wall A, at the point opposite the door, is the most appropriate. Wall B ranks second, whilst wall D should be the last choice of all.

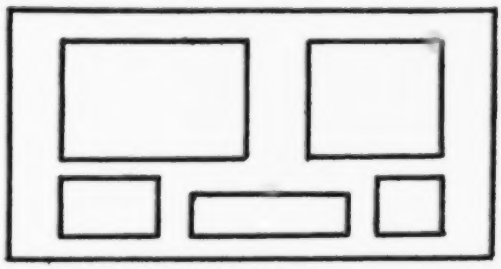
The location of a fixed board in a room is not likely to be the responsibility of the part-time tutor. What gets on it may be.



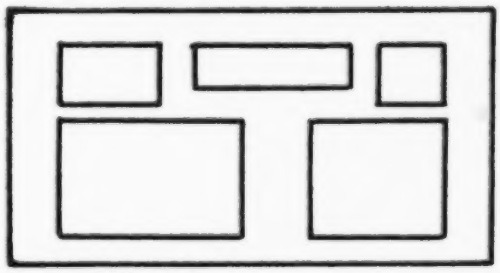
The layout for display boards should never be so haphazard, nor so over-crowded as to merit the observation of Douglas Barber, and others, that 'it resembles a Buddhist prayer-wheel in a gale!' The principle of layout for a display board is the same as for a poster or chart: good layout, crisp, neat, always fresh, well-balanced, as the following outlines show.



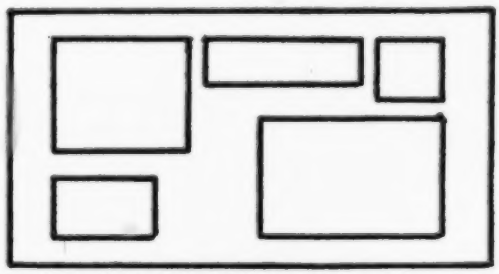
A POOR LAYOUT – HAPHAZARD MARGINS.
APT TO BE TOP HEAVY



B BETTER SPACING HERE BUT LARGER ITEMS AT TOP TEND TO BE OVERBEARING.



C GOOD BALANCE
GOOD MARGINS
PERHAPS TOO SYMMETRICAL?



D GOOD, INTERESTING LAYOUT
BALANCED AND VARIED.

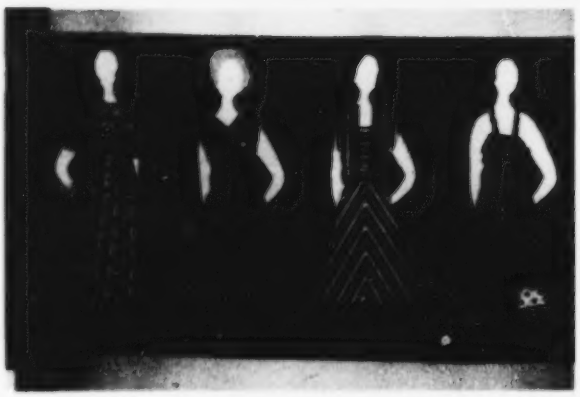
Pin-boards

A welter of manufactured boards, both wall-fixed and free-standing, abound on the market today. Principally they consist of soft, or pin-board material such as the 'Sundeala' type of manufactured board and are either painted or covered with material such as hessian. They take pins readily. Whether fixed or free-standing, the basic principle of height is that the middle point should be approximately eye level to the average viewer.

Peg-boards

Peg-board (or perforated hard-board) provides an interesting variation to the pin-board. A whole range of peg-board fitting, meeting almost every possible display need, is available from M. Myers and Sons Limited. Golf tees, string, tape, Blu-tak, and combinations of these, provide the teacher with a multitude of possibilities for displaying three-dimensional objects.

Flannelboards



Gone are the days when one needed to stretch woollen blanket, felt, etc., over plywood and pin the edges; now, self-adhesive green card-table baize is available. Attached to medium-thick card, it makes an excellent lightweight flannelboard, to which can be attached all manner of fabrics – felts, lint, glasspaper-backed and flock-backed pictures

and charts. (Flock paper is available at arts and crafts shops. Dryad's market a flock puff-pack – simply daub a little paste to the back of a picture and 'puff' the plastic bottle of flock on to it!).

Experiment with fabrics before making your flannelboard. There are possibilities with, say, foam-backed nylon; a flannelboard made with this material or with a nylon velvet surface will accept quite heavy three-dimensional objects which have been backed with the hooked side of 'Velcro' zip material. 'Velcro' offers the teacher a multitude of possibilities and is worth more attention. A series of self-clinging letters for use on flannelboards is marketed by Allen Brothers Patents.

The flannelboard, like the magnetic board, scores over the chalkboard in that objects can be moved over its surface.

Plastic-faced board

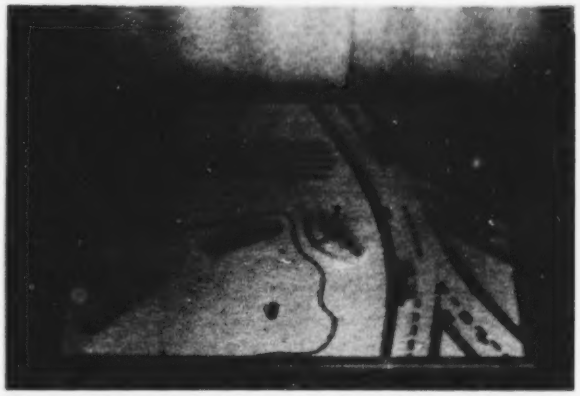
A boon to the imaginative teacher has been the influx of new materials, all self-adhesive or semi-tacky, and invariably paper or plastic. They are marketed for particular purposes but adapt readily to visual aids. Shapes, tapes, labels, symbols, sheets both transparent and coloured, they lend themselves to teaching requirements, especially in work which can be prepared in advance. They can be applied to any type of surface. So comprehensive is their range that one need never put pen or brush to paper again!

Magnetic board

Really a misnomer, for the board itself is non-magnetic – simply a sheet of fine-gauge (for lightness) ferrous metal on which magnets can be placed. The objects for display have small magnets, often pieces of magnetised rubber strip, attached. A standard-sized sheet of tin-plate steel (usually 28½" × 20") can be purchased from a hardware or engineering store. This can be painted with blackboard paint; it can be covered with plastic and/or mounted on card or hardboard to give it rigidity. On its own the corners will be sharp and in need of folding or rounding. Mini-car trim makes an ideal edging. Planned wisely it can be a multi-purpose board – screen, magnetic, plastic, writing surfaced board!

Magnetic items are available in profusion. The chief material is formed from rubber into which magnetic filings have been put. Coloured rubber tiles (6" × 6") can be cut with scissors into any shape whilst there are coloured shapes, tapes, strings in many sizes. Heavy strip rubber (originally designed for fridge and freezer doors etc.) can be cut and glued to heavy objects – simply judge the weight of the item and match it magnetically. Self-adhesive rubber strip facilitates the magnetising of caption cards etc. Twinlock-Sasco offer a unique range of magnetic shapes and tapes to match their stick-on series.

Its principal merit is ease of movement. For some objects the board can be given permanent features – using tapes and shapes – whilst the variable elements of the aids are magnetised, e.g. a music teacher would have the staves permanent, and the notes movable; the advanced driving instructor's board would display standard road layouts, with the variations and the cars magnetised. The magnetic board scores highly by enabling the students to manipulate the items – making for a participative situation.



Some of the magnetic tapes and symbols available for use on a magnetic board

Many of the above boards can be combined. For example, one piece of card can be a flannelboard on one side and be plastic-faced on the other. The metal magnetic board can be overlaid with either the self-adhesive baize – thus a magnetic/flannelboard – or with the ESA 'markerboard' surface material, or 'Velleda' (by Baignol and Farjon) thus becoming a screen/magnetic, ink-writing/plastic-faced board!

DISPLAY PROBLEMS AND SOLUTIONS

The educational building of the future could be a centre of intellectual stimulation wherein every opportunity is taken, especially by audile and visual techniques, to exploit fully the sensory capability of anyone who enters. Each room and corridor, wall (and ceiling?) might be a permanent screen on which is projected a continually changing panorama, one passage being dedicated to paintings, another to ceramics, another to the history of architecture and so on, but constantly changing so that each time we pass we experience fresh insights. Even today, a well-planned exhibition should excite the maximum number of senses in the viewer and aim to involve him *physically* in the projected situation by offering him controls to operate.

For many of us, however, the realities of our present teaching situation can be discouraging, constricting and uninspiring, especially if we hold classes in, say, pubs, church halls or other places with little to offer in the way of facilities or comfort. Teachers and students are often deterred from setting up even the most simple display by the very nature of the environment in which they find themselves. Wall surfaces, table and bench spaces are seldom available whilst larger displays or exhibitions are frequently out of the question except, perhaps, as annual occasions. For the resourceful and self-sufficient teacher, however, there are many possibilities for display.

Simple display bases

One of the main functions of a display is to draw attention to something by giving it prominence and, in most cases, by isolating the various elements of the display from their immediate surroundings.

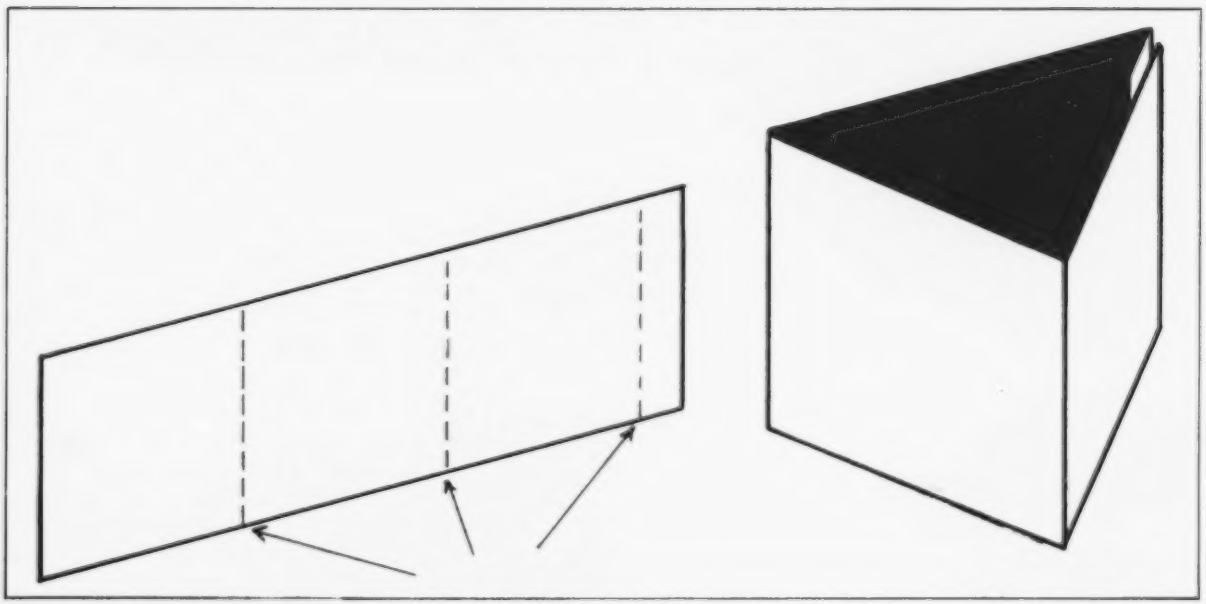
Commercially available display systems are often versatile and offer a range of surfaces and methods of mounting and attaching various items. In many cases, however, such systems may not be available – and alternatives must be explored.

If we wish to display something prominently, a simple method is to set it against a contrasting background or place it on some form of base. By employing the simple technique of scoring one side of a piece of card with a sharp knife and then folding, a free-standing background surface may be made. This simple technique opens up a range of possibilities:

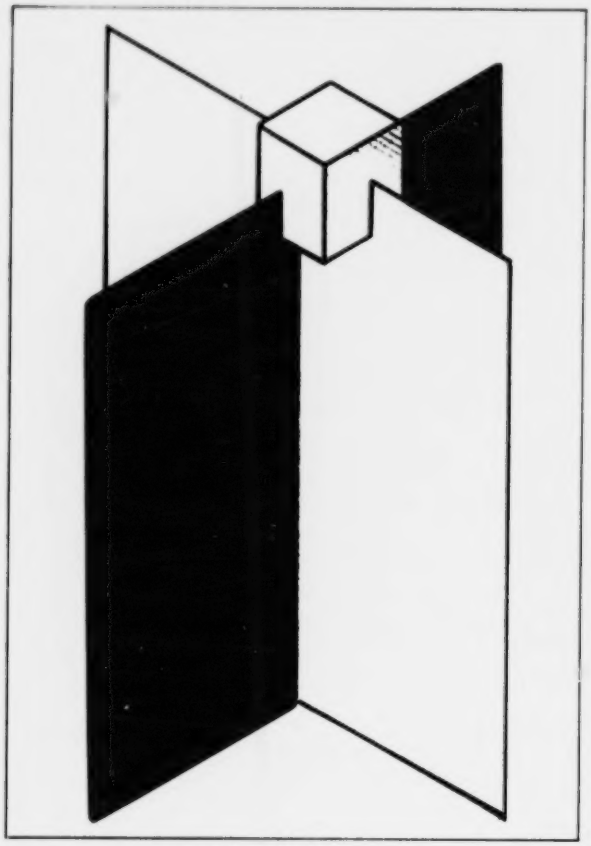
- by joining two or more folded card backgrounds together the *folding display* presents the teacher with a display model which will fold flat and can be used in many ways. By adding channels, interchangeable sets of photographs, diagrams, materials, etc. can become a regular feature of a course, helping the teacher to extend the subject and widen the students' perceptions by introducing information related to the broader aspects of the subject.

- by joining two folded cards together at right-angles by a small cube of polystyrene, cross-cut to half its depth, a simple free-standing display model can be made allowing maximum use of all surfaces. (Illustration overleaf). These 'units' could be joined together to form larger vertical or horizontal units. The same scoring and folding technique may be used to make the sides of bases of various shapes and sizes. The top can be made of card or polystyrene and fixed with glue, tape or pins. The bases may be joined to form larger units or used on vertical surfaces to provide display spaces for individual items. Other backgrounds can be made from corrugated paper, lengths of material, boxes, polystyrene and other easily obtainable materials.

A variant of this technique uses transparent acetate LP record protecting sleeves. A piece of stiff card 12¼" square is inserted into the sleeve, and two or more sleeves can be hinged together with masking tape. Leave a ⅛" gap between the sleeves tape the 'hinge' on both sides to make a firm, strong join. Diagrams, worksheets, photo-



Folding displays



Simple display

graphs can be inserted in front of the card. You can write on the acetate with OHP pens, and of course the display is double-sided.

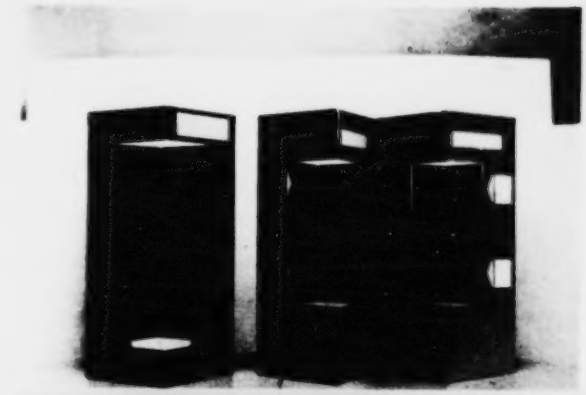
Fixing and mounting display items

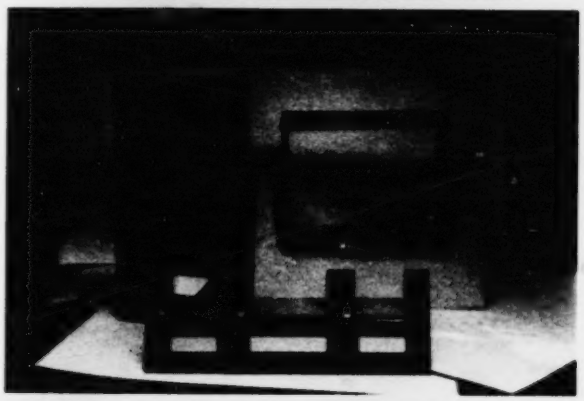
A wide range of tapes, adhesives and other devices is available for fixing and mounting display items. These include double-sided self-adhesive foam pads and tapes, compounds such as Blu-tak – which may be used again and do not mark surfaces. Velcro, spray adhesives – allowing paper and card to be fixed to a variety of smooth surfaces without marking them.

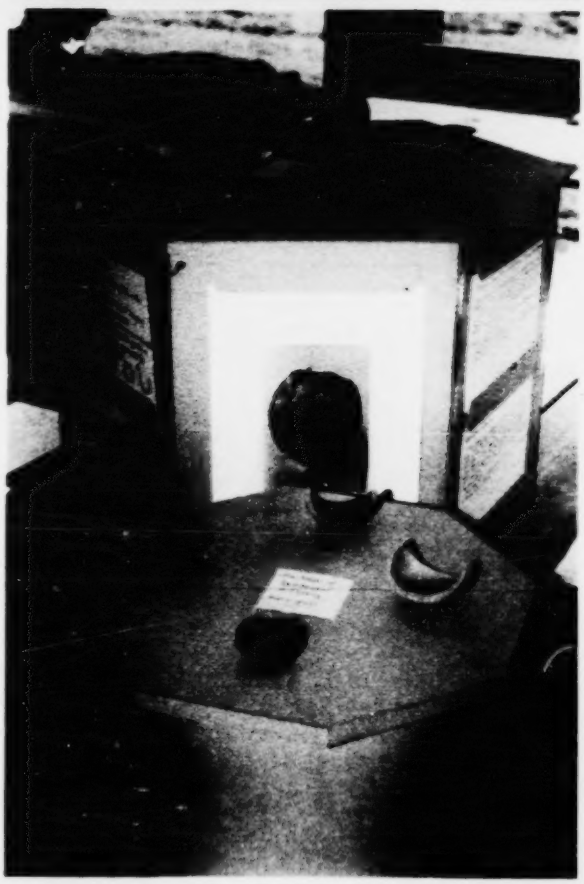
The range of coloured-headed pins used in chart-making, suction pads, clips and other devices may be adapted in a variety of ways by the imaginative teacher.

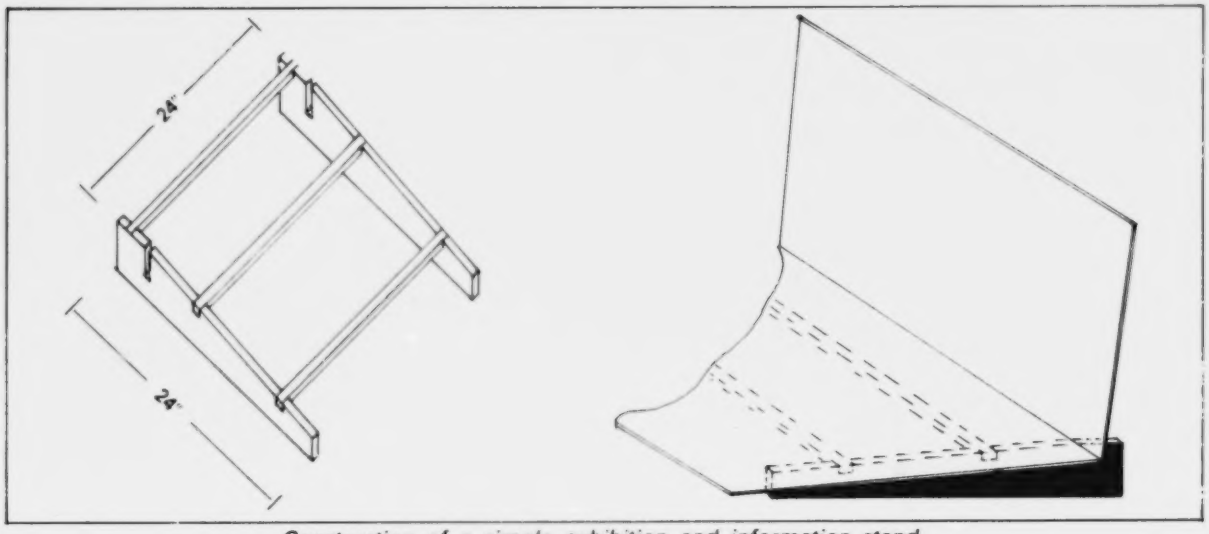
Setting up the display

Even in the most modest display, the aspects of design, colour and lettering are of significant importance. The overall effect should aim to attract; the content should be interesting and hold the attention of the onlooker. It should aim to stimulate as many of the senses as possible and create yet another effective learning situation both for our students and for ourselves.



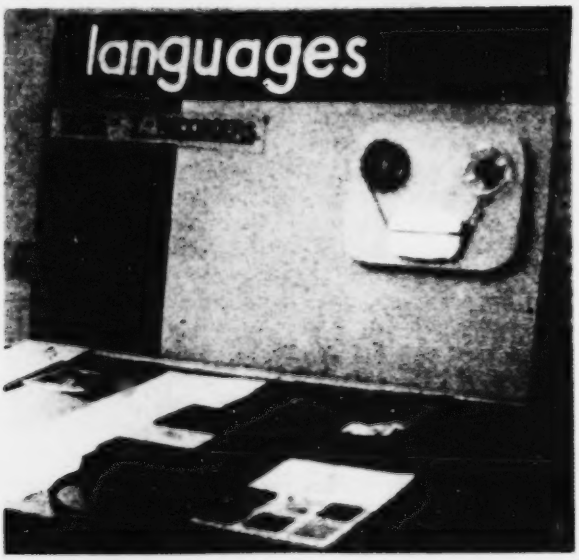






Construction of a simple exhibition and information stand

A very simple idea for exhibiting information and specimens is suggested in the diagram. This is a simple stand made of softwood, and requiring no finish, with 3" × 1" sides with 1½" × ⅜" struts. Slots approximately ¼" wide and 1½" deep are cut into each side, approximately 3" from the back. From this slot the sides are tapered to about 1". The idea is to hinge on the rough side with hessian (upholsterer's webbing is ideal) two pieces of hardboard each approximately 30" × 24" allowing a margin equal to the depth of the slots in each side.



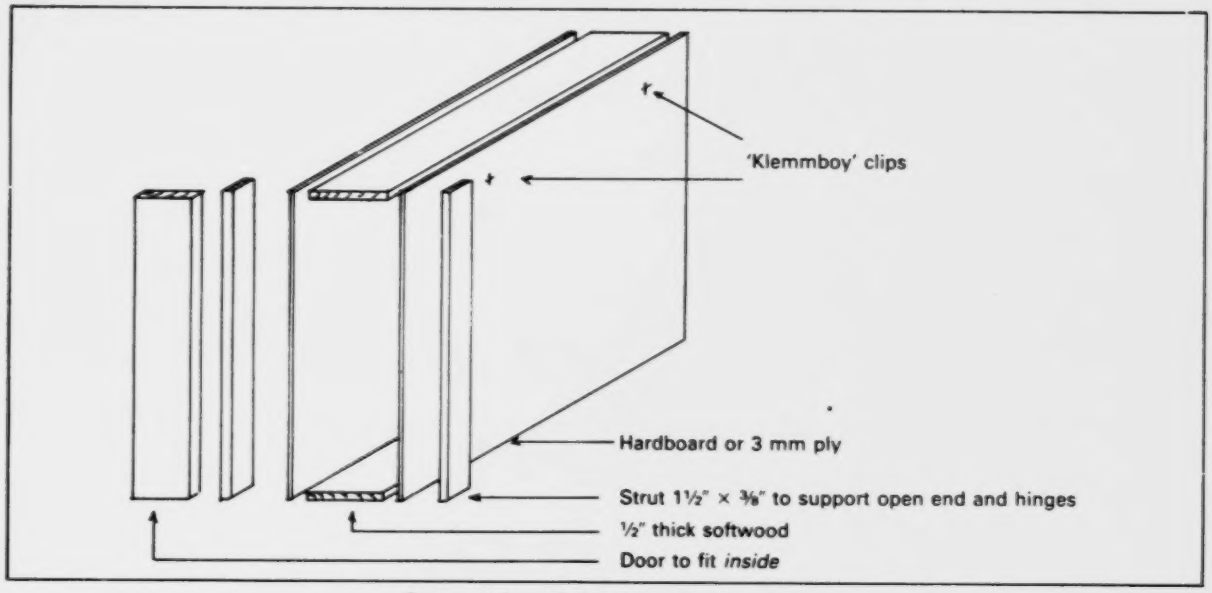
As the photograph shows, one part of the hinged hardboard serves as a backdrop for titles, etc., while the other is a surface for displaying items or pamphlets. When not in use the hardboard simply folds up. One can make a 'nest' of these wooden stands – each one being 1¾" narrower than the next, so that for storage they all fit neatly together.

THE CHART-CARRYING CASE

If some, or all, of the circumstances in which you teach are unfavourable, why not aim at making yourself self-sufficient? You can fairly easily make yourself a chart carrying-case suited to your own needs and circumstances. A teacher who uses public transport will need to think carefully about size and weight, whilst a car-driver will be guided by the room available in the body of the car, or in the space between the front and rear seats. A simple, yet fairly robust case can be made from heavy card covered with a sheet of self-adhesive plastic (such as 'Fablon' or 'Contact'). Those who are more adept with scissors can enhance the appearance and capacity with a concertina-type seam or pleat using the same plastic stuck to itself. Handles can also be added (using, say, strong tape) and attached by glue and plastic.

For the more practical and capable teacher, a durable case can be made from seasoned softwood 5" wide by ½" thick and two sides of hardboard or 3mm plywood (see diagram). No joints are required and the case can be put together with wood-glue and panel-pins. The door is simply a piece of the same wood framing and is held with cranked hinges. Two strips (approximately 1½" × ⅜") of wood are required on the outside leading edges of the hardboard to support the hinges. An ordinary luggage-case handle can be purchased from most DIY stores and this should be fixed with small nuts and bolts.

This case can also become a display stand by fixing to the top of one side two self-adhesive 'Klemmboy' clips. Just lift the case on to a desk or table, open the door, lift out the particular chart and fix it to the clips. If the exterior of the box is smoothed and finished in blackboard paint it will also serve, in emergencies, as a chalkboard. A



Construction of the chart-carrying case

further possibility is to fix to one side, before painting, a sheet of fine-gauge tin-plated steel to give a magnetic surface (use 'Evo-stik' for this).

Ready-made case

A ready-made chart-carrying case can be found in the mass-produced, and cheap to buy, portable wallpaper pasting tables. These are available in most DIY shops at prices below £6 each. Remove the legs – a quick job requiring only a screw-driver and you are left with a case capable of carrying at least 24 charts. These can be held in each leaf simply by plastic-covered curtain wire, using hooks and eyes. Treat the exterior in the same way as the other case (see photograph). One small point: the width of the wallpaper pasting table is slightly less than the usual 21" card. Charts should be tailored to fit into the case, so it is well, when planning, to bear in mind the standard sizes of card. Two popular sizes are 25" × 20" and 31½" × 21½". If all visual aids are mounted on card (never rolled, unless they are extra large), they will last longer.

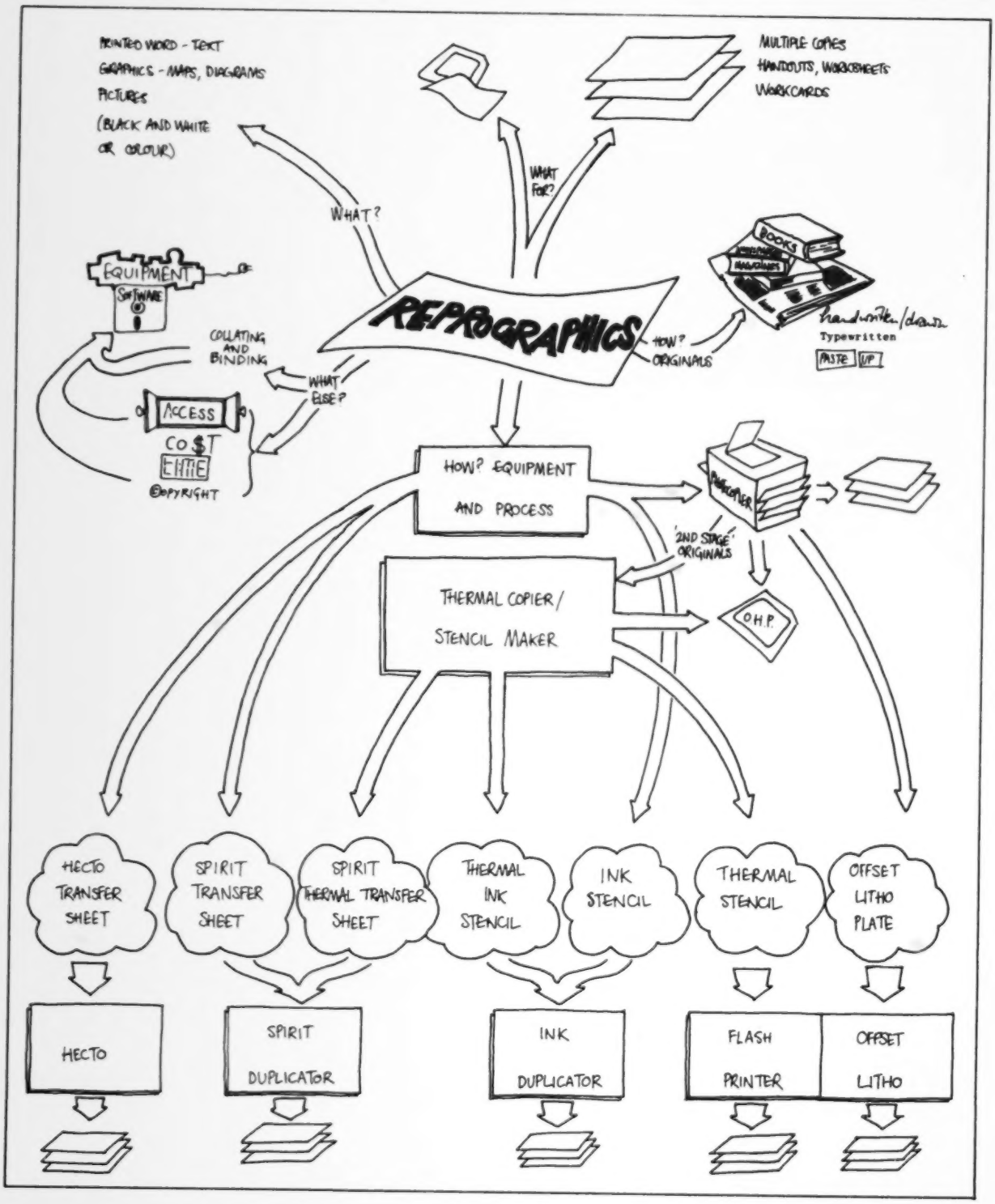
Chart carrying cases made from wallpaper pasting tables

This type of chart-carrying case can be converted easily into a display stand. Place the case on a table, take out the desired chart and fix it to the side with the 'Klemmboy' self-adhesive clips.

Contents of the case

Basic items for your box might include a simple projector screen; a flannelboard; a plastic-surfaced board; a magnetic board. With the exception of the magnetic board all are made from card of medium thickness. A professional looking and adequate projector screen can be made simply from a sheet of white card. With black ink, paint a one-inch border rounding the corners, after marking out with a saucer. This item is quite large enough for viewing by at least two dozen people and saves the chore of carting a large roll-up screen.

4. REPROGRAPHICS



Reprographics is the process of reproducing graphics (that is, any written or drawn material); for most teachers this material will be in the form of the handout, worksheet or work card. Handouts are among the most frequently used, and among the most useful of learning aids available to teachers and students. They can be used for written illustration to supplement the spoken word: they can provide maps, diagrams, pictures and facsimiles of actual documents. They can be designed as 'take-aways', to give material for study outside the classroom. In worksheet or workcard form they can be used to give guided, step-by-step learning.

To be effective, handouts need to be designed with as much care as charts or posters. Too much information on one sheet, or material which is badly designed or reproduced, can interfere with the message you are trying to give. You need to have a clear idea of the purpose of your handout, and to design it to achieve that purpose in the best way possible.

ORIGINALS

The original material (text, diagram, map or photograph) for your handout can come from a number of sources – hand-written or hand-drawn, printed, typed, duplicated from an existing handout or a combination of any or all of these. Generally speaking, the better your original the better your copies. For all copying which involves a thermal process (see page 32) originals must contain a good carbon content in the ink. Most black printing and duplicating inks, drawing ink and carbon typewriter ribbons are suitable. Most coloured inks, ball point pens, fountain pen inks, fibre and felt-tipped pens and ordinary typewriting ribbon contain no carbon, or too little to be effective. Originals can be reproduced in a number of ways. Your choice of production method will depend on the equipment you have available, time and cost. The diagram on the previous page gives an indication of the main processes, and the tables on pages 37/38 compare processes in terms of their advantages and disadvantages and cost.

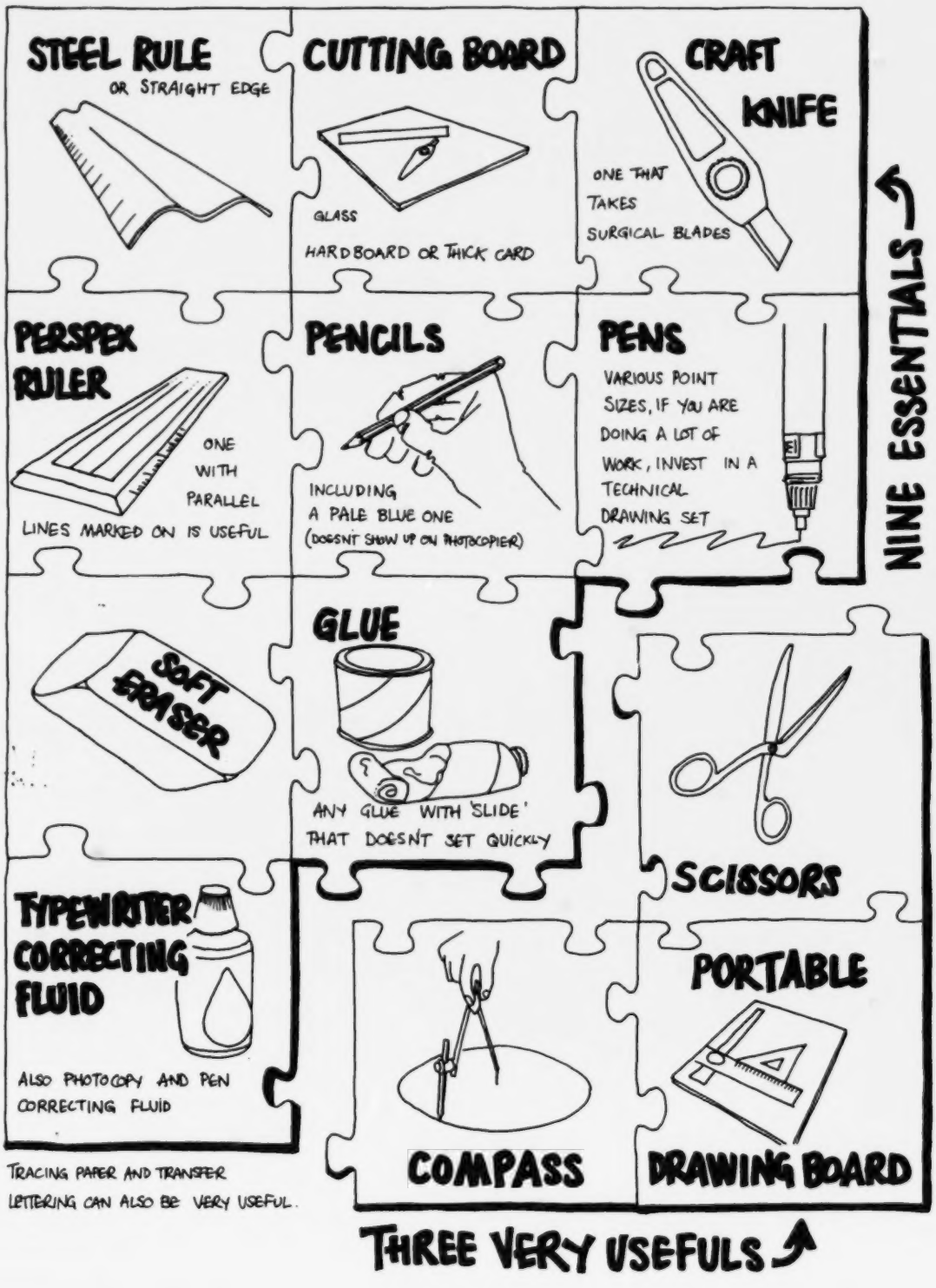
Straightforward text can be copied direct from books, magazines or newspapers (**but see the section on Copyright**), or can be hand-written or typed. Pages of text can provide uninspiring reading, and it is often useful to 'lift' a text and make it more interesting by adding cartoons, captions, illustrations. You need very little skill to do this. All you *do* need is a little time and imagination, and some very basic equipment – transparent perspex ruler, some pens, a craft knife, scissors and glue. If you can afford the luxury of a small portable drawing board (about £12-£15 from artists' suppliers and good stationers) the job is that much easier.

Planning and designing

Planning and designing handouts and posters is essential if you want to achieve a professional finish. This, in time, should mean that the work you produce is more effective in communicating your message. You may feel that this is a lot of expense for a few handouts. If you regularly use graphic material, isn't it worth giving your students a good product that is memorable and helps them to learn? Planning can also save you time, money and a waste of expensive materials.

Six steps to planning:

1. Draw up a rough outline of your topic on a blank sheet.
2. Break the topic down into easy sections or steps – this may suggest possible headings.
3. Decide on illustrations. Draw them in roughly to check their size.
4. Decide on the final shape (format) of the finished work. For some of the processes described in this chapter, you now have to go ahead and commit your ideas to paper, stencil or spirit transfer sheet.
5. Sketch in your illustrations first; then the main headings; then fill the remaining spaces with text.
6. Check your work before printing – correcting mistakes by hand afterwards on dozens of copies is laborious!


STEEL RULE
OR STRAIGHT EDGE
CUTTING BOARD
GLASS
HARDBOARD OR THICK CARD
CRAFT KNIFE
ONE THAT TAKES SURGICAL BLADES
NINE ESSENTIALS
PERSPEX RULER
ONE WITH PARALLEL LINES MARKED ON IS USEFUL
PENCILS
INCLUDING A PALE BLUE ONE (DOESNT SHOW UP ON PHOTOCOPIER)
PENS
VARIOUS POINT SIZES, IF YOU ARE DOING A LOT OF WORK, INVEST IN A TECHNICAL DRAWING SET
SOFT ERASER
GLUE
ANY GLUE WITH 'SLIDE' THAT DOESN'T SET QUICKLY
SCISSORS
TYPEWRITER CORRECTING FLUID
ALSO PHOTOCOPY AND PEN CORRECTING FLUID
TRACING PAPER AND TRANSFER LETTERING CAN ALSO BE VERY USEFUL.
COMPASS
PORTABLE DRAWING BOARD
THREE VERY USEFULS

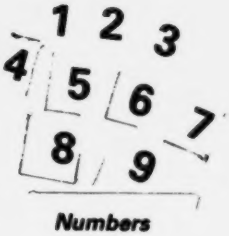
PASTE-UP

HOW IT WORKS

The component parts used to make page 31 (All the pieces have been reduced in size to show how the system works..)

Cartoon characters

'PASTE-UP' THE PROCESS
(Heading to be enlarged)



Numbers

Nine simple steps to achieving a professional finish....
....and it's amazingly easy!

Take a blank sheet of paper the size of your finished page (or larger, if you have access to a photocopier which reduces: reduced work produces a neater, crisper image – beware of microscopic text in your end product!)

Make a rough sketch of what you want the end product to look like. This can help you check the relationship of text to text, illustration to illustration and text to illustration. AVOID OVERCROWDING: KEEP IT SIMPLE.

Decide on illustrations, (if you have access to a suitable photocopier, enlarge or reduce them). Make copies of your illustrations if you can, just in case of accidents.

Decide on headings, and follow the same process as for illustrations. Headings can be hand-drawn or done in transfer lettering – in either case it is useful to do them on a separate piece of paper.

Cut out illustrations and headings and assemble them on your blank page.
Play with them, move them around, try all possibilities until you've achieved the effect you want. Refer back to your rough. DON'T GLUE ANYTHING DOWN YET. Mark the position of your items with a pale blue pencil.

This page was produced by the paste up process – see next page for full details – and photocopied on to 80 gm² paper.

Draw up your text, which ... typed or written in odd shapes to fit round your illustrations or headings. You can cut out your ... around to fit in with the rest of the jigsaw, or you can type or write straight into the blank space.

When you are happy with the final effect, glue ... taking care of your alignment. (Here's where a small portable drawing board comes in handy) ... using a glue which doesn't set at once, and which has 'slide', you can adjust your pieces ...

Go over the cut edges of your pieces with ... correcting fluid to avoid shadows on your photocopy, offset-litho plate ... Cut black edges can be blackened with a pen to neaten.

Take a photocopy of the finished product if you can, to check for faults and shadows. Tidy up with correcting fluid. A spare photocopy is an insurance against accidents.

Text in two typefaces to fit the space available.

The completed page you have now put together is called a PASTE-UP. It is made up of several items, pasted on to a single sheet, sometimes overlapping and in several layers. It is now ready for running off on a photocopier, or for making thermal stencils, thermal transfer sheets, or offset-litho plates. Finished work is sometimes referred to as 'camera ready' – a useful phrase to remember if you are handing work to a printer to run off.

The cutting lines have not been re-touched with correcting fluid, to give an idea of the shadows that are inevitable with the paste up process.

'PASTE-UP' THE PROCESS

Nine simple steps to achieving a professional finish....

....and it's amazingly easy!

1 Take a blank sheet of paper the size of your finished page (or larger, if you have access to a photocopier which reduces: reduced work produces a neater, crisper image – beware of microscopic text in your end product!)

2 Make a rough sketch of what you want the end product to look like. This can help you check the relationship of text to text, illustration to illustration and text to illustration. AVOID OVERCROWDING: KEEP IT SIMPLE.

3 Decide on illustrations, (if you have access to a suitable photocopier, enlarge or reduce them). Make copies of your illustrations if you can, just in case of accidents.

4 Decide on headings, and follow the same process as for illustrations. Headings can be hand-drawn or done in transfer lettering – in either case it is useful to do them on a separate piece of paper.

5 Cut out illustrations and headings and assemble them on your blank page. Play with them, move them around, try all possibilities until you've achieved the effect you want. Refer back to your rough sketch. DON'T GLUE ANYTHING DOWN YET. Mark the position of your items with a pale blue pencil – it doesn't show up on a photocopier, thermal stencil or offset-litho plate.

6 Draw up your text, which may have to be typed or written in odd shapes to fit round your illustrations or headings. You can cut out your text and move it around to fit in with the rest of the jigsaw, or you can type or write straight into the blank spaces.

7 When you are happy with the final effect, glue everything down, taking care of your alignment. (Here's where a small portable drawing board comes in handy – see p. 24). By using a glue which doesn't set at once, and which has 'slide', you can adjust your pieces more accurately.

8 Go over the cut edges of your pieces with typewriter correcting fluid to avoid shadows on your photocopy, offset-litho plate or thermal stencil. Cut black edges can be blackened with a pen to neaten.

9 Take a photocopy of the finished product if you can, to check for faults and shadows. Tidy up with correcting fluid. A spare photocopy is an insurance against accidents.

The completed page you have now put together is called a PASTE-UP. It is made up of several items, pasted on to a single sheet, sometimes overlapping and in several layers. It is now ready for running off on a photocopier, or for making thermal stencils, thermal transfer sheets, or offset-litho plates. Finished work is sometimes referred to as 'camera ready' – a useful phrase to remember if you are handing work to a printer to run off.

THE MAIN REPROGRAPHIC PROCESSES

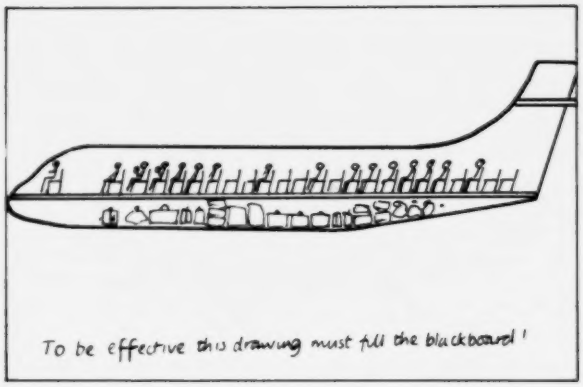
1 Photocopier

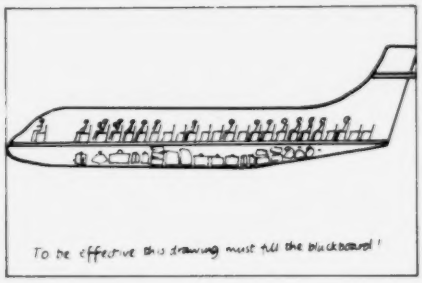
There is a wide variety of machines in use. Some use a special paper (either in sheets or off a roll). The trend is towards plain paper copiers, which will copy on to the most reasonable quality paper, white or coloured. Some copiers will make OHP acetates.

Most copiers now use a dry process. Some still use a liquid toner process (the copies come out damp with liquid spirit based toner). Liquid toner copies are not as good to use with a thermal stencil maker.

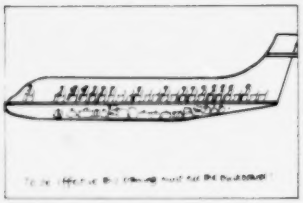
Most copiers will copy black originals: some will pick up colour from originals (though the copy will be from black to various shades of grey). Some are poor at picking up colour – especially blues, yellows and reds. Some advanced copiers will now produce multicoloured copies from multicoloured originals or 35 mm colour slides, but copies are expensive. An increasingly large range of copiers will reduce and/or enlarge your original.

Photographs can be copied if they are 'screened', a process which turns solid tones into a series of dots, as in newspaper and magazine photos.





By reducing your reductions still further you can ultimately produce illegible microdots; by enlarging your enlargements you can go up to one letter per page and beyond.



2. Thermal copier/stencil maker

The thermal copier (sometimes called an 'infra-red copier' or 'heat copier') consists of a box containing an electric motor which drives a glass cylinder, and sometimes a small cooling fan. An infra-red heating element is the final component, which usually shines orange when copies are being made. Some machines also have a speed control. The photograph below is of a fairly typical machine.

Originals for thermal copying need to contain ink with a high carbon content. The process can be used for single copies on paper or thin card, to produce stencils for ink or spirit duplicators and OHP transparencies. Some machines will also laminate thin plastic on to card or paper to give a durable wipeable surface. Software is often not interchangeable between machines and it is best to familiarise yourself with the manufacturer's instructions for the machine you use.

3. Electronic stencil cutter

These machines use similar originals to the thermal copier, but they produce stencils which can be used only on ink duplicators. They are complicated machines to set up and stencil production is best left in the hands of a trained operator.

4. Ink duplicator

The two makes in most common use are Roneo and Gestetner. They use different types of ink (Roneo-spirit based; Gestetner – water based) and a different fitting for stencils. Some manufacturers produce what are called 'G and R' or 'universal' stencils which fit either make. Ink stencils are versatile, in the fact that they can be typed on or written on by hand. When typing, the letters on your typewriter will get filled with wax unless you use a thin plastic film to protect them. The wax can be cleaned out using a stiff typewriter brush and methylated spirit, or by rolling a ball of Blu-tak over the letters.

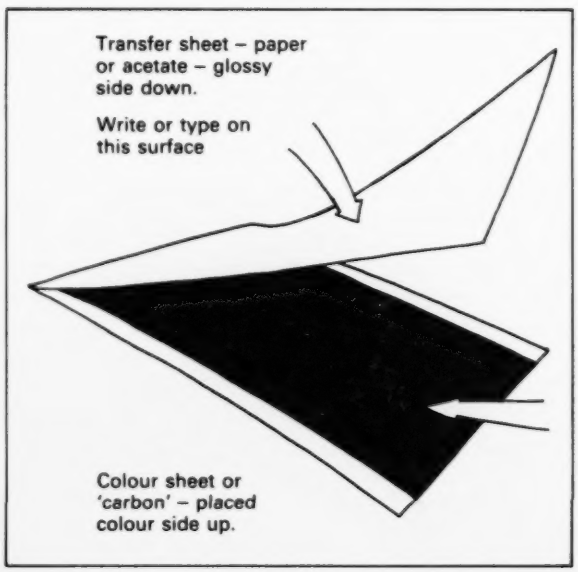
When writing it is best to use a proper stylus and a silk covered metal plate, and a lettering guide (confusingly, also called a 'stencil'). Stencils can be produced on a thermal copier – and some thermal stencils can be typed or written on as well, to give a variety of processes on one stencil – or on an electric stencil cutter.

Their main advantage is apparent if you are producing large numbers, 50 copies up to one or two thousand. Their use for small numbers of copies has been almost universally replaced by the photocopier. They also have the advantage that you can print on thin card (known as Duplicator or Queen Anne Board) which many copiers will not take. Ink duplicators usually use black ink: by having several ink drums one machine can print in other colours. Only one colour can be applied at a time, and colour register is not very accurate.

Their disadvantages are mainly in the decreasing availability of the specially absorbent paper – a reflection of the fact that ink duplicating is being overtaken by photocopying and off-set litho printing, and that ink duplicating is coming to be regarded as a bit old-fashioned.

5. Spirit Duplicator

Known almost universally as the 'Banda' (in the same way that all vacuum cleaners are 'Hoovers') the spirit duplicator uses an 'offset' process to print. The 'software' for spirit duplicating consists of (i) transfer sheets, either of highly glossy, usually white paper, or thin acetate and (ii) colour offset sheets (sometimes confusingly called 'carbons', although they don't contain any carbon). The transfer sheet and colour offset sheet are sometimes joined together in a single unit, with a sheet of protective tissue between, which needs to be removed before use. By writing or typing on the transfer sheet, the 'carbon' is transferred to the underside of the transfer sheet in reverse. A succession of different coloured 'carbons' can be used with the same transfer sheet to produce a multicoloured result, with very accurate colour register (as you are always writing or typing on the transfer sheet). For hand-written or hand-drawn sheets, best results are obtained by using a fine ball-point pen and resting on a 'Formica' or similar surface. When typing it is best to use a plastic backing sheet and either remove the typewriter ribbon or put the machine on 'stencil' setting.

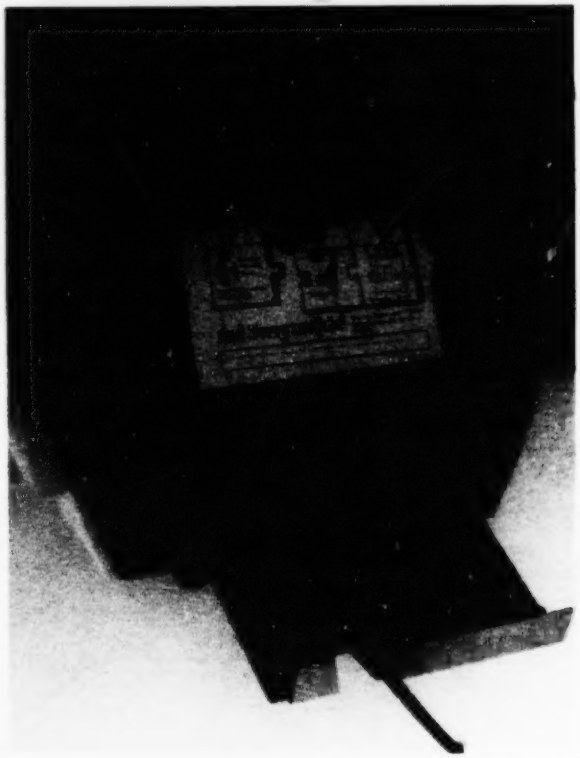

Transfer sheet – paper or acetate – glossy side down.
Write or type on this surface
Colour sheet or 'carbon' – placed colour side up.

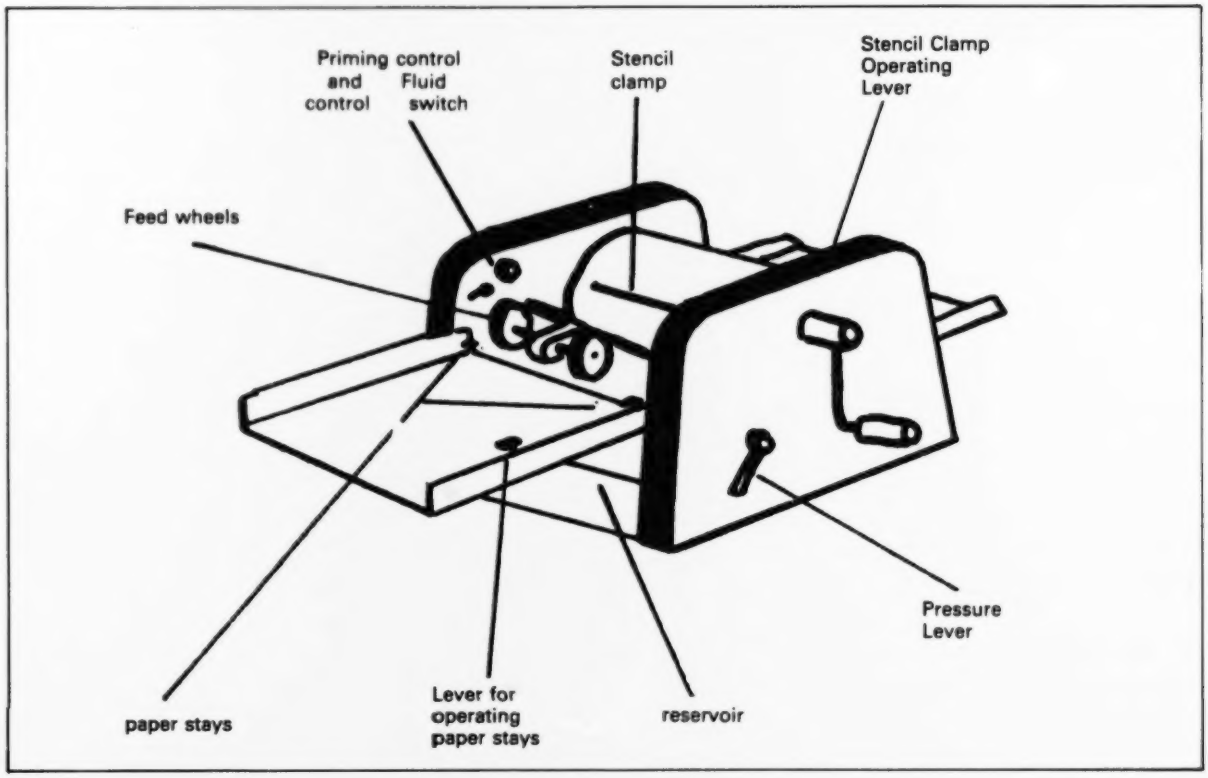
Spirit thermal transfer sheets use a thermal stencil maker to transfer the carbon on to the transfer sheet. Different manufacturers use slightly different processes, so follow carefully the instructions on the stencil box or in the thermal stencil maker's instruction book. Colour can be added afterwards by hand, using coloured 'carbons'. Some types of thermally produced transfer sheet have a dual use; after running off copies you can then use the transfer sheet as an OHP transparency, having the particular advantage in that your students have the same handout in front of them as the OHP transparency puts on the screen.

The finished transfer sheet fits on to the spirit duplicator, 'carbon', i.e. *reverse image,* side outwards. The printing is a 'spirit offset' process. The run-off paper is wetted with spirit as it passes through the machine, and then pressed by rollers against the reverse image on the transfer sheet. The spirit transfers some of the colour from the 'carbon' on to the run-off paper – on the finished print the text is right way round.

The process is good for medium to large numbers of copies (30-100), and good for diagrams and maps which are enhanced by multi-coloured work. Special paper is required for best results available in white or tints. For runs of up to about 50 you can use photocopy paper. For very short runs of up to about 20, you can use duplicating paper – its absorbency drains the colour very quickly from the transfer sheet.

Unless you are lucky and very careful it is not a very good process for back-to-back printing on paper, but you can print on thin card – about postcard thickness.

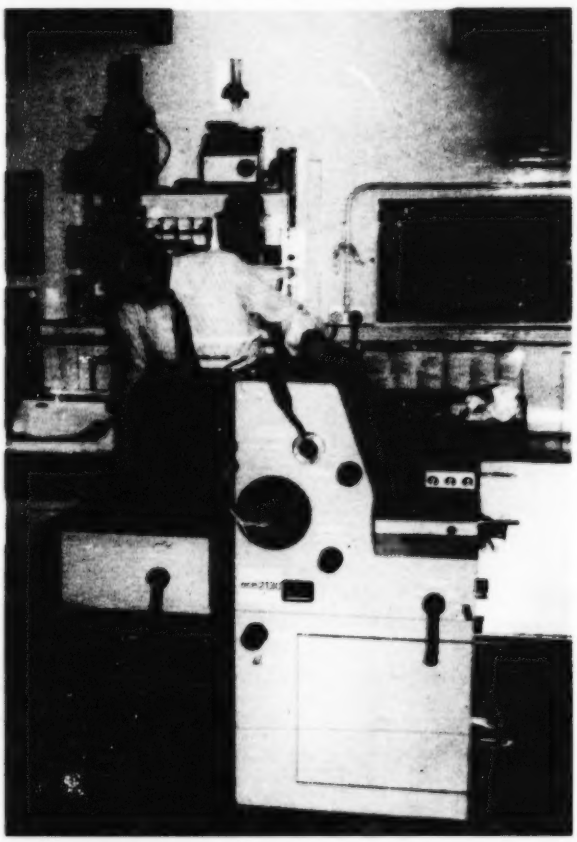




6. Offset Duplicator/Litho Printer

The offset-litho printer is similar to a large ink duplicator but rather more complex. Larger machines can produce multicoloured copies on one print run; smaller machines do one colour at a time. Changing colours is a lengthy and messy process. As they are complicated, and very expensive machines, they are usually in the care of a technician so you may not need to know how to operate one. If you do, it is suggested that you receive expert instruction!

The process is similar to that for the spirit duplicator. Printing plates (offset transfer plates) are in paper or metal and can be produced by some photocopiers, or electronically by a special plate maker. Paper plates are fairly cheap and can run up to 500 copies. Metal plates are much more expensive but can run up to 50,000 copies.



Any paper from thin paper to card (twice postcard thickness) can be used, though it needs to be of good surface quality.

Offset-litho is good for long runs, which require accurate printing and colour register. It is very good for photographs, though they have to be 'screened' first. Most professional printers – from small jobbing printers to large newspaper, magazine and book printers – now use offset-litho. At school or college level, it is economic, if high quality printing and presentation is required, for anything from 100 copies to many thousands.

7. Hecto Duplicator

The HECTO duplicating process was developed to provide low-cost, 'low-tech' colour printing for the Third World. The HECTO has no moving parts, and requires no electricity. It is a particularly economical, if slow, process for printing small quantities of leaflets, handouts or posters in small or large sizes.

The HECTO kit consists of a plastic tray, A4 size, filled with a gelatine compound. This size tray can be used to make smaller sized copies; for sizes larger than A4 a baking tray or tea-tray can be used, with gelatine compound mixed in sufficient quantity to fill the tray. Gelatine (supplied in crystal form), a plastic smoother and a sponge complete the printing equipment. Transfer sheets are produced in two ways: (i) text and diagrams can be written and drawn using the special fine-line and shading pens supplied with the kit on any good quality, smooth-surfaced plain paper (*not* duplicating paper: its surface is too absorbent). (ii) typed or hand-written and hand-drawn text transfer sheets can be made using 'carbons', similar to those for the spirit duplicator.

There is an important difference between the Hecto process and that for the spirit duplicator. For Hecto you write or type *on the carbon*, to produce a 'right way round' image on the transfer sheet. Lining up different colours is difficult when using 'carbons'. .Care must be taken when preparing transfer sheets, as mistakes cannot be rectified on the sheet.

The gelatine compound in the tray is prepared by wetting, and the transfer sheet is placed face down on the gelatine, smoothed out and left for a few minutes. The colour from the transfer sheet is transferred to the gelatine surface, but in reverse. Copy paper is placed on the gelatine and smoothed on. The reverse image on the gelatine is copied on to the copy paper as a right-way-round image.

8. Flashprinter

Flashprinting involves using a machine which looks like a large plastic waffle iron, to produce multicoloured copies – all the colours being printed at the same time. The process uses thermal stencils in a light card frame which are inserted, together with carbon-based originals into the printer. The printer is closed and four flashbulbs burn the original's text or diagram on to the stencil.

The stencils are expensive, but the same effect can be produced more cheaply if you have access to a thermal copier/stencil maker, by making a thermal stencil in the usual way, using a

carbon-based original. These stencils, however, will not fit into the printer and copies have to be run off manually.

Having made your stencil, you dab ink on the 'right side' of the stencil to give whatever colour effect you want. The ink is then covered with an acetate sheet. If you are using the flashprinter, the machine acts as a small printing press. If you are not using the machine, or using ordinary thermal stencils you must insert your copy paper one sheet at a time under the stencil and rub over the acetate with the edge of a ruler, forcing the ink on to your copies.

The process is slow and laborious, but gives a colourful effect. With the printer, runs of up to 100 are possible: without, you can get up to 50 or 80. The best use is for short runs of multi-coloured posters.

COLLATING, BINDING AND COVERING

Collating

If you are producing material which consists of more than one sheet you may want to sort them into order – collate them – before, perhaps, stapling or binding. If you have only two or three sheets and only a few copies of each, this is easy by

hand: if you have a large number of sheets or a lot of copies to collate, you may find a collating machine eases the boredom! Many schools, colleges and most teachers' centres have machines. Some collators also staple each finished batch. Some photocopiers will automatically copy, collate and staple.

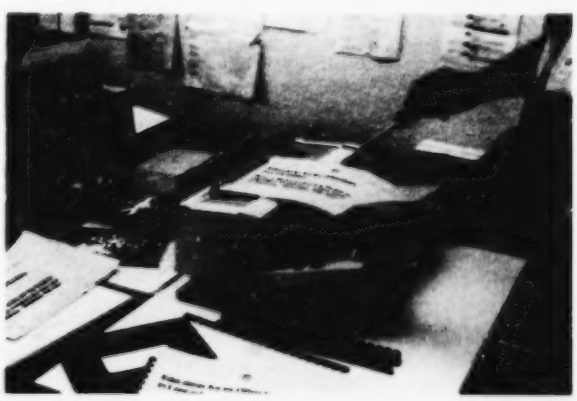
Binding

Stapling is the simplest way to join a few sheets together. Unless you have access to a heavy-duty stapler, you are limited to a dozen sheets or so. Centre-fold stapling requires a special long-armed stapler or a centrefold stapling machine.

Plastic clips, a bit like stud earrings, are a useful alternative which allow you to take apart the clipped pack and re-assemble it easily.

Plastic slide binders present a neatly finished job. Staples along the bound edge are hidden by the slide. Some plastic covers have an integral slide binder.

Spine Binders, applied by machine (such as the one illustrated below), give a good finish for a more permanent job. There is a range of machines to punch and bind, either in plastic or wire. The machines cost several hundred pounds, but many schools, colleges and most teachers' centres have them.



Ring Binders come in a variety of shapes, sizes, colours and makes. Your paper needs to be punched first (accurately, or it can look a mess; particularly if you can punch only a few sheets of a fat document at a time).

Glued Spines can also be used for a permanent job. You usually need a machine, which will cut accurately the edge to be bound, grip it, and apply the glue or tape. There is a variety of machines, using either a hot or cold glue process, or self-adhesive tape. Using a spine gluer needs a lot of practice to get the knack.

Covers

Whatever process you use to bind your work, an attractive finish can be achieved fairly simply. Coloured card or plastic covers make a professional job. If you are not able to print the cover, try adding a title by means of a white, pre-printed, self-adhesive or glued label.

A summary of reprographic methods

PROCESS	ORGINALS CAN BE – TYPED	HAND-DRAWN	PASTED-UP	MAGAZINES, BOOKS	CARBON ORIGINAL	EQUIPMENT OR MACHINERY REQUIRED	MATERIALS REQUIRED	MAXIMUM NUMBER OF COPIES PRACTICAL ON EACH 'RUN'	PARTICULAR ADVANTAGES OR DISADVANTAGES
PHOTOCOPY	X	X	X	X	NO	Photocopier	Plain paper, some older copiers use special paper.	Unlimited, except by cost.	Fairly instant. Large quantities expensive. No special skills required.
THERMAL COPY	X	X	X		YES	Thermal Copier	Thermal 'units' For single copies, OHP acetates and laminates.	1	Limited copies can be made, but can copy on to card and acetates.
INK STENCIL	X	X			NO	Ink Duplicator	Wax Stencils, Ink.	up to 2000	Can be messy. Hard to correct after a copy 'run' is started. Some skill required. Stencils can be used again after storage.
INK STENCIL (THERMAL)	X	X	X		YES	Thermal Copier, Ink Duplicator	Thermal Stencils, Ink	up to 500	
SPIRIT TRANSFER	X	X			NO	Spirit Duplicator	Transfer sheets, 'carbons', spirit	up to 150	Messy fluid – some people allergic. Some skill required. Multicolour on one run.
SPIRIT TRANSFER (THERMAL)	X	X	X		YES	Thermal copier, Spirit Duplicator	Thermal spirit-transfer sheets, spirit	up to 100	
OFFSET-LITHO	X	X	X		NO	Thermal copier, photocopier or platemaker; offset-litho duplicator.	Offset plates, Ink	Several thousand	Needs a technician, expensive for short runs. Can be multi-colour on one run.
HECTO	X	X			NO	Hecto duplicator	Hecto pens, Hecto 'carbons'	up to 80	Fairly slow, cheap, portable, difficult to correct mistakes on transfer sheets. Multicolour on one run.
FLASHPRINT	X	X	X		YES	Flashprinter (optional)	Thermal stencils, Flashprinter stencils	up to 50	Laborious without the machine, which is expensive. Some skill needed. Multi-colour on one run.
CARBON COPY	X	X			NO		Carbon paper	up to 10	Limited copies possible.

The table has been calculated on the basis of software and paper costs: it is assumed that the 'hidden' costs (e.g. of ink or duplicating fluid) are borne by the the college, centre or school.

Number of copies	1	10	20	50	100	500
Photocopy†	1.5	14.5	28.5	71	142	710
Ink Duplicator	15.4	19	23	35	55	215
Ink Duplicator (Thermal)	26.4	30	34	46	66	226
Spirit Duplicator	9.4	13	17	29	49	–
Spirit Duplicator (Thermal)	23.4	27	31	43	63	–
Offset Litho	not worth setting up for less than 100 copies.				150	500*

Thermal Copier	approx. 5p per copy
Hecto‡	approx. 1.5p per copy: 80 copies maximum
Flashprinter	approx. 1.5p per copy: 50 copies maximum
Carbon Copies	approx. 1.5p per copy

† Typical cost to college, centre or school on an up to date machine. Older machines may cost more. You may be charged up to 20p per copy from Libraries or 'instant print' shops.

* 1000 copies of offset-litho costs £7.00: so, the larger the run the more economic offset-litho becomes, per copy.

‡ Doesn't include cost of special pens.

COPYING AND COPYRIGHT

Many teachers copy materials for their own use, as study materials, or produce copies for their students to use. In recent years a number of court actions have been brought against individual teachers, schools, colleges and local authorities for illegal copying. Successful actions have led to heavy fines.

An agreement has been made between many education authorities and the Copyright Licensing Agency where the authority pays an annual fee to CLA in respect of licenced copying in schools, colleges, and adult education centres. A condition of the scheme is that all copying has to be recorded and details provided for the CLA.

Unless your school or college is covered by the CLA agreement, the only copying which is allowed (except for music) *by whatever means* (including writing material out by hand), without asking for the permission of the copyright holder, is for single copies for an individual's personal study use. So *you* may make a single copy for study, or your students may *each* make a single copy; but you are infringing the copyright law if you make multiple copies for your students. The only exception to this is for material which specifically states that it is not copyright.

Even if you make only a single copy you may only copy extracts and not a complete work (incidentally, a poem counts as a complete work, so technically you must not copy complete poems – not even a single copy for your own use!); and the extracts must be of less than 3,000 words.

Material which is *specifically excluded* from the education authorities/CLA agreement, and which you must therefore get permission from the publisher to copy includes – all music, Ordnance Survey maps, workbooks, worksheets and workcards, newspaper and periodical (magazine) material and examination papers.

If you regularly need to copy material, we suggest you obtain a copy of:

COPYRIGHT – CET Information Sheet No. 6. (December 1985) from the Council for Educational Technology (CET), 3 Devonshire Street, London W1N 2BA. (01 580 7553).

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COPYRIGHT AND THE CURRICULUM by Geoff Crabb and Bridget Czarnota, from Longman for the FEU, Longman Resources Unit, 62 Hallfield Road, Layesthorpe, York YO3 7XQ. (0904 425444).

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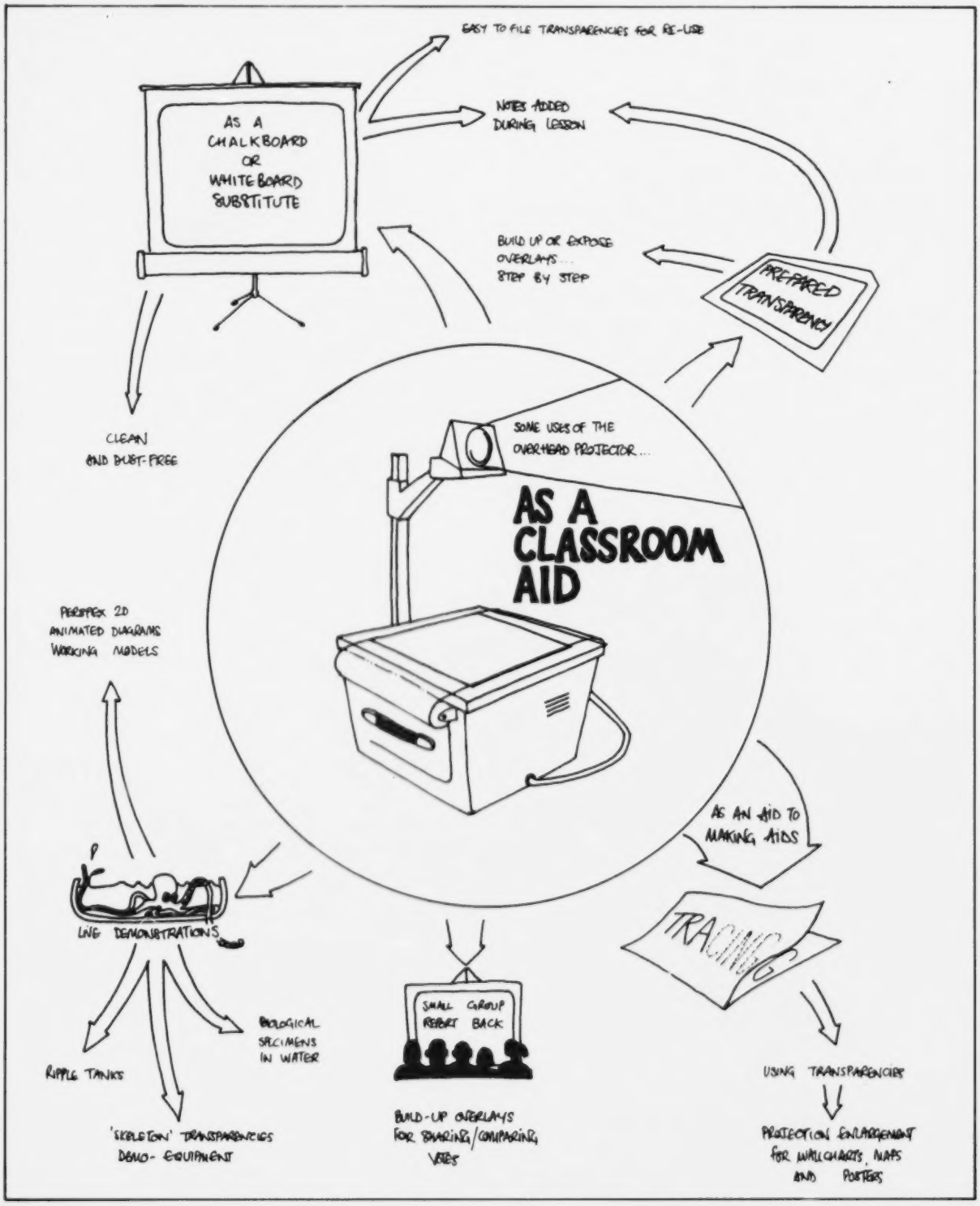
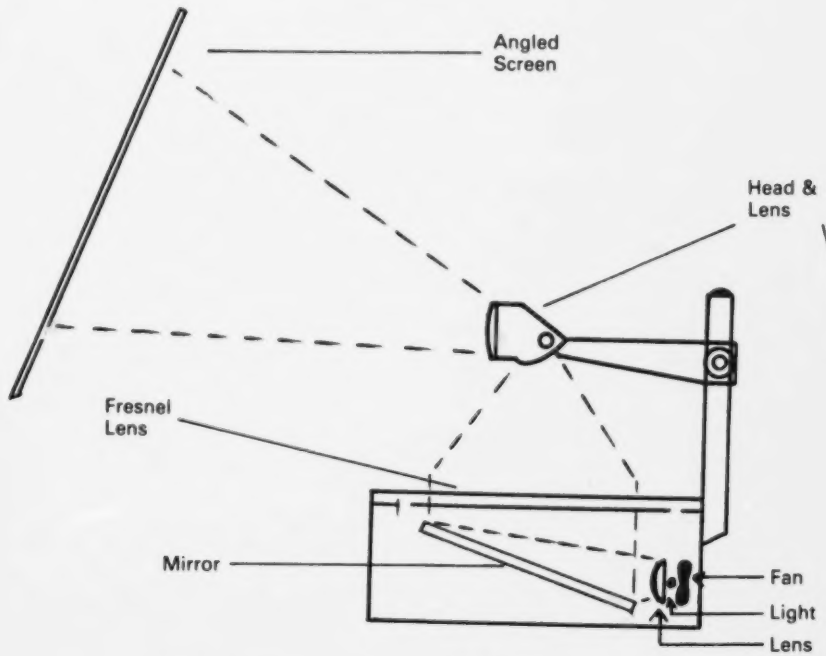
5. PROJECTION

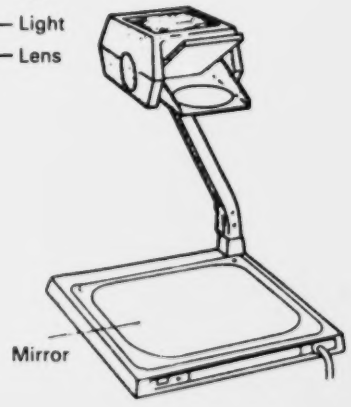

EASY TO FILE TRANSPARENCIES FOR RE-USE
AS A CHALKBOARD OR WHITEBOARD SUBSTITUTE
NOTES ADDED DURING LESSON
BUILD UP OR EXPOSE OVERLAYS... STEP BY STEP
PREPARED TRANSPARENCY
CLEAN AND DUST-FREE
SOME USES OF THE OVERHEAD PROJECTOR...
AS A CLASSROOM AID
PERSPEX 2D ANIMATED DIAGRAMS WORKING MODELS
AS AN AID TO MAKING AIDS
TRACING
LIVE DEMONSTRATIONS
BIOLOGICAL SPECIMENS IN WATER
RIPPLE TANKS
'SKELETON' TRANSPARENCIES DEMO- EQUIPMENT
SMALL GROUP REPORT BACK
BUILD-UP OVERLAYS FOR SHARING/COMPARING VIEWS
USING TRANSPARENCIES
PROJECTION ENLARGEMENT FOR WALLCHARTS, MAPS AND POSTERS

Some advantages of using projection for the presentation of teaching or learning materials are:

- the potentially greater impact of light and colour relevant to the subject matter;
- in some cases (e.g. travel slides) projection gives illustration which is almost as near to the 'real thing' as one can get;
- material can be enlarged, to clarify;
- movement (pictures, in the case of cine or video; or projected working models of biological specimens in the case of OHP or micro projection) can give invaluable added impact;
- for the teacher, charts and diagrams can be miniaturised for ease of transport, and so that a large store of materials can take up the minimum of space;
- the equipment can be operated by the teacher as part of presentation, or can be controlled by an individual student or small group at their own speed.



Cross-sectional of an overhead projector (not to scale) of the Fresnel lens type



Fresnel mirror type of projector. Light is projected from the head, reflected back up through the lens and on to the screen. This type of projector collapses into a portable briefcase

Overhead projectors

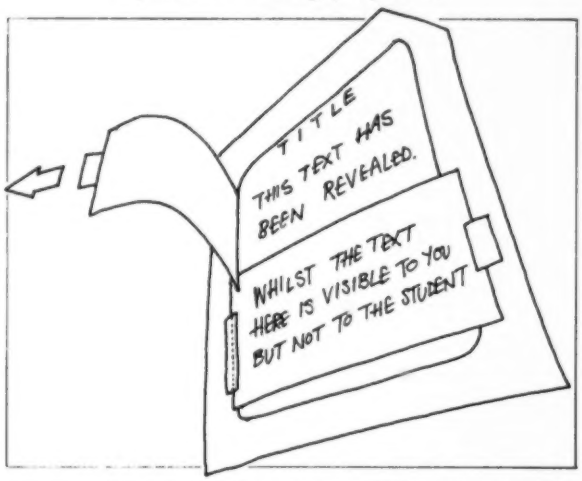
On the other hand, there are the disadvantages of the cost of projection equipment, problems of availability, setting up and blackout; and the time and expense of preparing materials.

Badly presented, projection can be counter-productive (remember the power of the visual image, which can distract from, as well as reinforce, learning). Whatever is used must be well-planned and manipulated, which implies complete familiarity with the equipment and confidence in the place of the material in the learning process.

OVERHEAD PROJECTORS

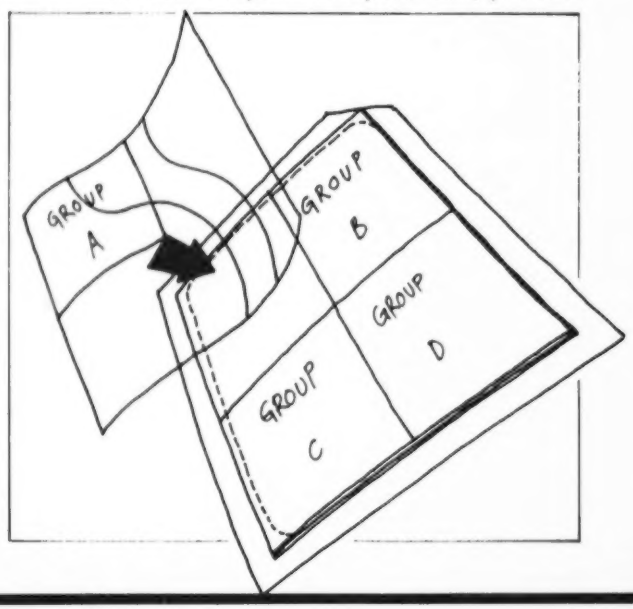
Only a few years ago overhead projectors were rare in the classroom; today they are often there but unused or under-used. Many teachers regard them as complicated – and a noisy or badly aligned projector can do much to ruin an otherwise good lesson. With only little experience and practice, an overhead projector can be one of the most versatile and exciting ways of presenting visual material. The overhead projector has many advantages.

1. Little or no darkening of the room is necessary; the very powerful lamp will throw a bright picture to fill a large screen, or even a white wall if no screen is available.
2. The instrument will accept a wide range of prepared illustration, by means of a sheet or reel of acetate across the lighted plate. Sheet transparencies can be mounted in card mounts to make them easier to handle.
3. You can face the class, and so remain sensitive to students' reactions while the image is thrown, enlarged, on a screen behind you.
4. Transparencies can be prepared in advance – hand-drawn, photocopied, thermal-copied, photographic – which enables you to use, for example, complete diagrams without losing valuable teaching time drawing them in front of the class.
5. With the use of 'overlays' (i.e. consecutive pieces of acetate laid one on another) you can build up a step-by-step exposition. At any stage, extra material can be added by hand using a wide range of translucent coloured pens. A useful hint here is to write added material on a blank acetate sheet laid over your prepared transparency – in this way you protect your original: the overlay can be cleaned and used again.
6. Another type of overlay involves obscuring most of your acetate with strips of thin paper, hinged along the side of the acetate. Your exposition can then be built up by revealing what lies under the paper as you fold it back. Students are not distracted or confused by too much material at once. If you use thin paper (such as typists' copy paper) for your over-lay blanks, *you* can see what is written on the acetate, but the paper is opaque enough to prevent it being projected.



When the transparency is first illuminated only the title will project. By lifting first (1) and then (2) overlays, the full text will be shown, one step at a time.

7. Because of the wide angle lenses now used, little space is needed between the projector and screen, making the overhead projector suitable for small group work.
8. If you divide your class into groups, say to discuss a topic and report back, you can



compare reports on the same screen. Each group is given an acetate sheet and a pen and asked to write in one quarter, half or third of the sheet (the technique is best limited to no more than four groups). The reports can then be superimposed to produce a composite report.

There are now many overhead projectors on the market; most use the Fresnel lens principle for concentrating the light from the transparency on to the projection lens. Many offer even wider angle lenses than the normal – valuable class space is at a premium. When choosing an instrument, check the following points:

Noise – most OHPs have cooling fans but different models vary considerably in noise level;

Definition – is the focus on the screen reasonably sharp across the whole field of the transparency?;

Glare – Fresnel lenses spill a lot of light where it is not needed, especially into the operator's eyes – is it better or worse than others, and is an accessory light-shield available? (Tinted or 'reversal' acetates help to prevent glare, but you are then limited in the amount of material you can add by hand during use);

Lamp and fuses – are these readily accessible and easy to replace? Is there a low light position on the switch (makes lamps last longer)?;

Size – older projectors have a square, 250mm × 250mm (10" × 10") glass plate: newer projectors often have a A4, 295mm x 210mm (11½" × 8¼") plate: if you have prepared 250mm × 250mm acetates it can be distracting to you and your students to find that you have to keep moving the acetate for them to see all the image.

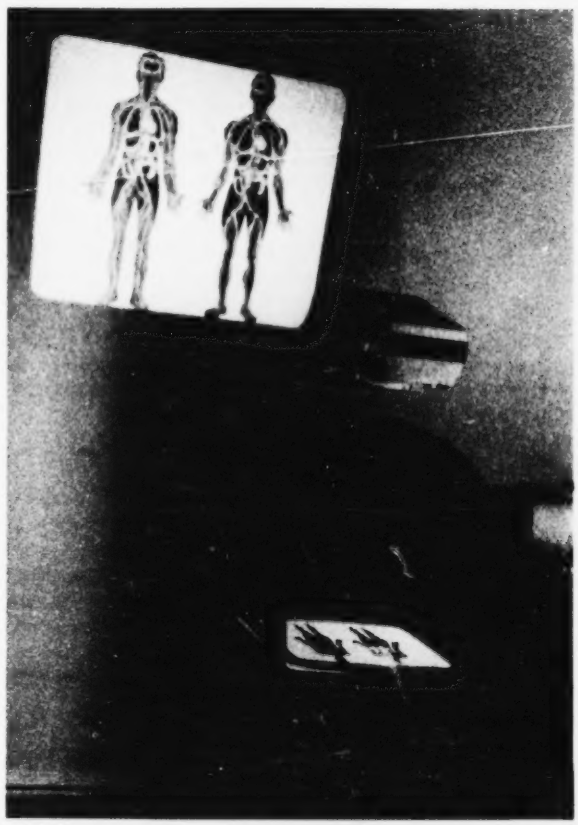
OHP equipment

OHP Transparency Materials, such as acetate sheets and rolls are available from many suppliers (see firms listed on p. 63). The sheets can be cardboard mounted for greater permanency, though that also makes them bulkier. You can also buy specially treated acetates for writing on directly with ballpoint pen or typewriter.

OHP Pens are available for writing on acetates and are either spirit or detergent based. The latter (sold as 'water-based') will wipe off with a damp tissue or sponge allowing you to re-use your acetate. The ink will also come off on your fingers if you sweat a lot when you are teaching! Spirit based pens are useful for preparing transparencies you want to keep. The ink can be removed with special solvent (expensive), meths or surgical spirit. Pens come in a range of tip sizes, from very fine to broad chisel point markers, and in a range of colours. Generally speaking, yellow, brown and violet do not project well; red, green, blue and black give a better image. All colours fade with time – keep your acetates out of the light when not in use. You will need to buy special OHP pens. They are expensive, but ordinary felt pens will not write on acetate.

Colour and Shading can be applied either by pen or by self-adhesive sheets. Some tints are of the dry transfer process (e.g. Letraset, Blick) others are just translucent 'sticky-back-plastic' (e.g. Frisk, Morrel, Schwanstäbilo and Transpaseal). Vinyl non-adhesive shapes can also be used.They 'stick' by static electricity, and can be peeled off and moved around or added as required.

Lettering can be applied by dry transfer (Letraset, Blick). You need to use special OHP lettering, which is heat resistant. A variety of tapes, shapes and symbols and architectural figures can be used to give a professional finish to your work if you feel you lack talent!



With the use of Polaroid materials, movement can now be a feature in the use of overhead projection. Transart offer a large range of ready-made subject transparencies or the materials to construct your own. The process involves underlining your diagrams with Polaroid tape or sheet, depending upon the type of movement you require. A spinning disc held below the lamp causes the details of the transparency to move.

Commercial transparencies may now be bought from various suppliers and can be very useful in particular subjects e.g. ruled music staves, basic map outlines, etc. Additional material can be added by the teacher.

Overlays can be added to transparency frames with adhesive tape, or more professional systems can be bought on various subjects from firms like Transart (Flipatran systems).

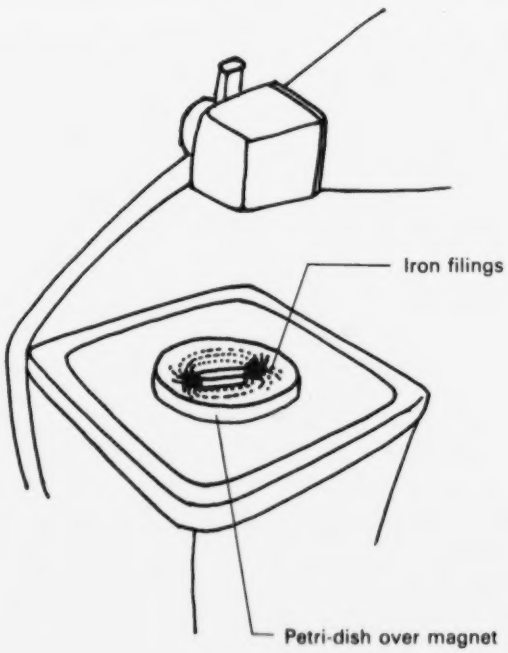
Tracing One advantage of acetates is that they are transparent. If you are not an artist, a short search can produce a photograph or diagram of the correct size for you to trace. (The projector can, incidentally, be used in the same way for enlarging: trace or photocopy your original diagram; project it on to a sheet of paper or card, adjusting the position and focus of the projector to obtain the exact size required; draw the projected image on to the paper or card. Large wall charts and diagrams can be produced quickly and easily.)

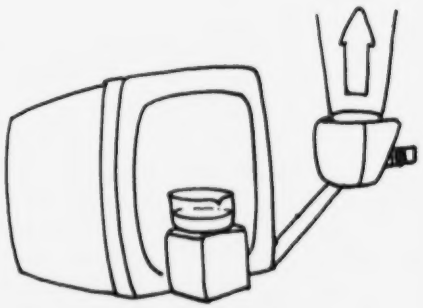
Copying transparencies from printed or written material. Excellent OHP transparencies can be made with any of several thermal copiers available, and photocopies. Thermal copiers are particularly versatile, in that copies of any drawing, text picture, etc. can be made, either in black or colour, and often with a colour 'reversal' version or spirit duplicator transfer sheets as well. 'Thermatran' material is particularly good for infra-red copiers – it has excellent colours and lies perfectly flat on the projector. Reproductions from pages in books have to be made on a photocopier; for infra-red copiers the originals have to be in sheet form. An excellent book entitled *'Using your overhead projector and other visual aids'* is available from Ofrex Office Supplies (see Chapter 10).

Animated OHP transparencies: simple movement can be incorporated into transparencies by joining parts mechanically, and by using thin perspex sheet, which can be bought either plain or tinted. Some commercially produced animated models are available (e.g. the 4-stroke cycle for the internal combustion engine).

Photographic transparencies are fairly expensive to make, but can be produced fairly simply in positive or negative form. Some techniques use a thermal copier, and a photographic developing process, which involves darkroom equipment. Polaroid have now produced an automatic system (Polaroid Colorgraph System) for producing full colour transparencies with the same speed and ease as Polaroid prints. Transparencies come in two sizes, 4¼" × 3¼" and 10" × 8".

Acetate Ripple tanks can be placed on top of the OHP screen to study ripple effects. Biological specimens can be seen swimming in shallow tanks – though care must be taken to avoid cooking them on a hot projector! To overcome this, some projectors can be operated on their side. The heat from the machine escapes upwards and is less harmful to the specimens in a sealed shallow tank which is held vertically against the screen.





Overhead projector on its side, image on ceiling

SLIDE PROJECTORS

The 35mm camera is now widely in use. Automatic exposure and a readily available (if still expensive) range of lenses makes the camera relatively simple to use, whether for landscapes, interiors, portraits or close-up work. Copying from book and magazine illustrations, or making slides of posters and wallcharts is now easy – but beware of copyright (see page 38). Slide projection offers not only first class teaching material, but also opportunities for students to contribute illustrations in many subject areas.

There are now very many different types of 35mm slide projector available. Efficient blackout used to be a problem, but smaller more powerful Halogen lamps now mean that you can project with partial blackout, or even little or none (as long as you are not in a room flooded with full sunlight). Bright projection screens, such as the Kodak Ektalight help to reduce the need for full blackout even further. For small groups, back projection units like the Bell and Howell or Kinderman obviate the blackout problem completely. They have the added advantage that they can be used by an individual student or small group.

Most projectors are still of the single slide, hand-fed type. An increasing number can be adapted to take a multiple slide magazine, either straight or rotary. The advantage of single slide feed is that you have total control over the order of projection. With a magazine you are committed to either show the slides in the order they are loaded, or distract your class while you flip through the pictures you don't want until you find the one you do.

When choosing a slide projector it is useful to check the following points:

1. How portable does it need to be? The smaller, lighter projectors often have less powerful lamps
2. How good a blackout do you have? Or, put another way, how bright a lamp do you need?
3. If you are likely to be keeping one picture on the screen for several minutes at a time, you need a projector with a powerful cooling fan. How noisy is the fan?
4. Does the projector have interchangeable lenses? One projector with several lenses (one for small groups, one for classroom, one for lecture hall projection) is cheaper than three projectors – some projectors have wide range zoom lenses, but you may lose picture quality and definition.
5. If you go for a magazine loading projector, how reliable are the magazines? Can you change the order of slides quickly and easily? Can you insert a single slide out of order?
6. Will the projector, or the magazine, take unmounted slides without jamming? Will it take a mixture of mounted and unmounted?
7. Will you ever want to use a system to synchronise slides with sound (tape/slide) or synchronise with another projector? If so, check that the projector has the right socket connections.
8. Is there useful height adjustment? You may be teaching in a variety of locations with different tables and stands.

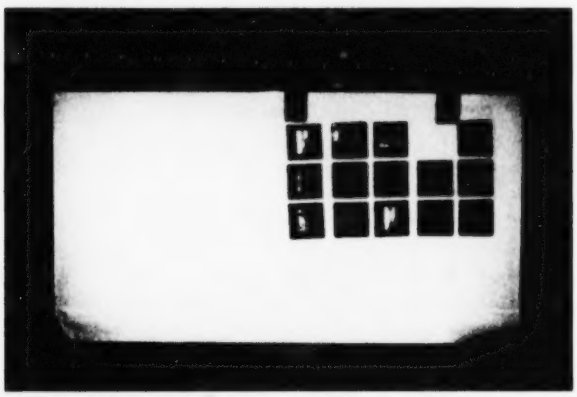
Crucial to your decision will be the questions of what you want to use your slide projector for. If your main use is to show an occasional, single slide to illustrate a particular point in a lesson, then an automatic projector can be cumbersome. If you use a slide sequence as part of an illustrated lecture, then automatic projectors become more useful. Cable or infra-red remote control operation enables you to stand in front of your audience to speak, instead of behind them next to the projector. If you want to produce a semi-animated display, then a bank of two or more synchronised projectors, with dissolve systems and facility to incorporate a taped commentary and automatic slide changing, become a practical, if expensive, option.

Kodak Carousel S-AV 1030 Projector

Slides

Slide Making. Apart from ordinary photographic methods, slides can be made by writing or drawing on glass, clear film or sheet acetate with the fine nylon-tipped pens used in overhead projection, and the direct copy acetate can make type-written slides. Kodak make direct copy slides for use with an ordinary pencil: they are called Ekagraphic Write-On slides and are sold in boxes of 100. Polaroid have now produced a 35mm Autoprocess System enabling you to develop your own transparencies (colour or black and white) without a darkroom and in a matter of minutes. The whole system costs less than £100.

Slide mounting and storing. To preserve valuable slides, mount them in glassed frames – types like GePe are excellent, as the glass is thin enough to suit most projector magazines, and they are free from Newton's Rings – the circular marks which sometimes appear when glass is pressed close to another surface. GePe also make a mount with registration pins – important if you want transparencies to superimpose exactly on the screen – and a mounting jig to speed assembly. For storing quantities of slides, there is nothing better than the plastic wallets made by firms like Nicholas Hunter; each holds 30 slides, costs only a few pence and can be placed in a binder or hung in a filing cabinet drawer. When searching for slides, the complete wallet can be placed on a light box. The slide light box is essential to help with slide sorting and programme making. It can easily be made with a



shallow wooden box about 18" × 20", a piece of opal glass or plastic of the same size, and a strip tungsten lamp underneath, although quite a cheap model can be bought from B & R Plastics.

FILM STRIP PROJECTORS

Most non-automatic slide projectors can be fitted with a carrier to take 35mm film in continuous strip. The advantages of film strips is that 30 or 40 pictures fit into a small space. Their disadvantages are that the unprotected film is easily damaged and that you have to project in the sequence decided by the compiler of the strip. Many teachers find it gives them greater flexibility to cut up the strip and mount each individual frame as a slide.

Film loop projectors

The 8 mm film loop has gained recognition and is now a major visual aid, especially in colleges and training centres. Although not so widely used in adult education, it has particular value for the small group or for individual recall viewing. The Loop Projector has the advantage of simplifying the presentation of a single idea on film – e.g. a movement in athletics or sport, a specific operation in the handling of tools. There are no reels or threading required – films are sealed in cassettes, away from dust and dirt, and are simply pushed into the projector. They can be shown over and over again at a constant speed. An extensive range of titles is available for purchase from several suppliers, and some will put film made by teachers into cassette for this type of use. Most of the projectors on the market offer back projection of the film loops on to a small bright screen, and have a still picture device.

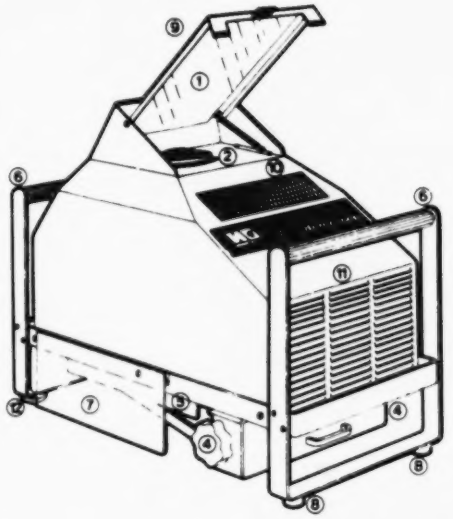
Dual Slide Projection

With the advance of electronics there has been a much greater use of twin slide projectors to present material more effectively – first by eliminating the blank screen in between a slide change and more importantly, to emphasise the relationship between one visual and another (e.g. adding further information to a map, diagram etc. or artistically building up a changing picture). To achieve this either two slide projectors linked by a dissolve unit such as the Animatic Convar is used or one slide projector with two lenses and an inbuilt change mechanism such as the Rollei P3800. The latter has the advantage of being much more portable and presents no difficulty in connecting up. Both these methods are relatively expensive. If facilities are required for recording the programme changes on to magnetic tape then the dissolve unit is correspondingly more expensive, but gives the great advantage that having constructed a programme it can be replayed any time in exactly the same way it was made.

There is however, a much cheaper way of projecting dissolve techniques which is by using a Purlock Duo-Fade unit. This costs less than £50 but unlike the equipment mentioned above, works entirely manually with the operator opening and closing special irises as the slides are changed. Although it is not possible to record the programme made on audio tape, each performance is capable of great flexibility and artistic inventiveness.

THE EPISCOPE

This is the latter-day offspring of the older and more cumbersome epidiascope which was so large and heavy it remained forever in one room – usually the largest room in the school. Technology, whilst reducing its size and weight though not its price, has not really increased its function, which is to mirror and project post-card size pictures or pages of books on to a screen. The illumination, compared with a film or slide projector, is still fairly low, even with modern halogen lamps, and a thoroughly dark room is necessary for a good picture. However, if there has not been the time or facilities to prepare slides of OHP transparencies from opaque material such as charts, pictures, maps, etc., the episcope is still the



1 mirror mounting
2 projection lens
3 double rocker switch
4 control knobs
5 work platen
6 handles
7 anti-glare shields
8 rubber feet
9 finger grips
10 air extract grill
11 air intake grill
12 base levelling screw

only instrument to cope and it will project colours without distortion. It will even show on the screen enlarged pictures of flat objects like coins, china plates, engravings, etc.

These instruments run quite hot in spite of good cooling fans (about 90°C at the projection aperture), so photographs and books can be damaged if left in the episcope for long.

One especially good use of the episcope is to draw teaching charts and diagrams from pictures and over-detailed drawings. With the original in the machine and an enlarged version projected on to paper on the wall, the outline can be rapidly sketched in and completed and coloured at leisure. Slides can be used in the same way – but with more time to ponder without the original looking a little sick at the edges!

One make of overhead projector (Dunlop Westayr) combines both OHP and episcope projection. Kodak produce a print projector, about the size of a large shoe box, which is a low-powered episcope, needing total blackout for successful projection.

CINE FILM PROJECTORS

Only two gauges of cine film are now in general use for educational purposes: 16 mm and Super 8 mm. Older films made on Standard 8 mm may still be in use, and some film-makers are still using cameras of this gauge, so if the purchase of an 8 mm projector is being considered, it may be advisable to invest in one which can, with simple conversion procedure, handle both Standard and Super. Modern technology has made the addition of sound to 8 mm a simple matter: the film is magnetically stripped either during manufacture or after exposure and processing, and sound can be recorded thereon. The most recent cameras offer 'sound-on-film', when a microphone is connected to the camera and the recording automatically synchronised with the pictures at the time of shooting film. Although relatively expensive, this system offers limitless possibilities for educational illustration with instructional films of various kinds. Alternatively, with post-exposure stripped films, commentaries and other sound can be used for everything except lip synchronisation. It is advisable, therefore, to consider the purchase of a dual-8 *sound* projector as meeting all present and future requirements. One word of caution: there is yet a third 8 mm film gauge available, with a quite different sprocket system. This is called Single-8, and must have its own projector, but, fortunately, is made by only one firm, Fuji, and is thus much less common. Some dual 8 mm projectors are, however, for Super and *Single* 8 films.

There are several makes of Dual Super/ Standard 8mm projectors on the market, but for class use choose one which gives an adequate light output with a wide aperture lens (preferably f 1.3 or wider) and a high wattage lamp (12v 150 watts or 24v 250 watts). The sound output should also be adequate for a large room, with preferably a socket for an external loudspeaker to give good quality without distortion. All 8 mm projectors are very portable, but do require a good screen to give of their best.

There are already considerable commercial libraries for Super-8 sound and silent film hire and purchase, and many titles will be very suitable for adult education purposes.

16 mm Film has, of course, for long been the main gauge for educational use, and there are thousands of professionally-made films for hire and, in many cases, available on free loan. The vast majority of these have optical sound tracks, and most projectors in educational centres, schools, etc., are equipped to handle only these. More recently, however, the magnetic sound track described above in connection with Super 8 mm film has come to be used on many 16 mm films, especially those made by amateurs or professional groups. To handle these, a projector which will replay magnetic as well as optical sound will be required, and if an education project involves recording sound on a stripped silent film, a projector which has magnetic *record* as well as playback facilities will be needed.

There are many different types of 16 mm projectors available, and it may well be that most teachers of adults will have to be content with whatever happens to be available. If a new purchase is being considered, however, and all that is required is to handle the replay of optical tracks of borrowed or hired professional films, there is little doubt that at the moment one projector is outstanding: the Bell & Howell 1680 Slot Load. In addition to excellent optics, and sound quality, the threading of this projector is simplicity itself *and* a film can be started at any point, or a sequence repeated as often as desired – often the most desirable film requirement for a class.

The threading system used is also very kind to films and prevents the not infrequent damage to sprocket perforations. Even the best of the other auto-load or self-threading projectors lack this 'start anywhere' feature of the 1680.

The focal length of the lens used has to suit the length of room in which the projector is used to give a good size picture on the screen, but remember that for most types there are lens attachments available which will convert the standard lens into the focal length required – even 'zoom' types with great flexibility.

If an adult centre is lucky enough to have access to two similar 16 mm projectors and wishes to show complete feature films of two spools or more, it may be possible to obtain a changeover unit which will automatically switch one on and the other off at the right point.

6. RECORDED SOUND

Natural sound is a valuable and still underused teaching aid. Take, for example, an evening class in creative writing, made up of adults straight from work. The students are tired in mind and body. But the immediate task is to begin generating ideas and themes. The tutor leads the students in gently, asking them to relax and listen to a piece of recorded sound – water flowing, birdsong, country sounds, light music. Her topic is 'A day in the country'. The recording is followed by a discussion, developing ideas triggered off in the imagination by the recording, and then writing can begin.

Games and problem-setting can be handled in a similar way. A tutor of adolescents with learning difficulties devised an exercise which presented a sequence of sounds: someone asleep, an alarm clock, a groan, rustle of bedclothes, footsteps, door opening, sound of water, sound of cleaning teeth. She then posed the question 'what happened next?'. The students, working in pairs, discussed what they thought had followed, and reported back to the class. A good deal of discussion and argument followed, significant from a group previously regarded as inarticulate and unable to form ideas of their own. It is also worth noting that the recording lasted only a few minutes, and simply used the normal domestic sounds we all hear every day.

Sound accompanied by still pictures or slides can also be most effective. It is possible to leave a distinct impression of action or movement in the students' minds with a combination of a sequence of stills with a lively commentary. For instance, several stills of a football match, with a sequence of passes that led to a goal, can take on the appearance of an action-packed visual experience if the commentary is colourful (and especially if it is overlaid with the spectators' roars recorded from a genuine match).

Dramatising a scene is a further step. A recent lesson on road safety began with a cassette recording of the exchange between two motorists who had collided, one hysterical and the other calm and measured. The tutor had acted this out with a fellow teacher against a background of busy road noises. The class developed a deep and productive discussion on how to act in such circumstances, and produced a detailed checklists of do's and don'ts.

As well as stimulating discussion, audio effects can also help to create mood and ambience. The teacher of languages who takes a cassette recorder abroad on holiday can provide the students with many evocative sounds to give verisimilitude to language role-play.

Recordings of the background noise of offices, traffic, wind, the sea, interiors of factories, etc., have all been used to add realism to role-play. We respond much more quickly to evocative visuals and sounds than to words describing them – they are triggers to fire the imagination and accelerate the process of involvement, and so learning. There is an interesting parallel with drama in the theatre; when the play takes place on the stage with conventional set and scenery the audience is prepared, when the curtain rises, to enter into a particular place, age, and time of day with no need for further description. Where there is no scenery, words and actions become all-important, and it may be some time before the audience can participate in the total 'feel' of the production. However, a play without scenery making an imaginative use of sound can be most compelling: one is reminded of the little girl who said she preferred radio to television plays because 'the scenery is so much better'.

When it is difficult or impossible to make this kind of sound recording for oneself, a library of sound effects on record or tape can be most valuable. The BBC has produced much material of this kind, which can be obtained through the usual suppliers. The enormous variety of background sounds includes such items as: 'general office background', 'supermarket background', 'light industry machine shop', 'small crowd in surburban pub', 'general atmosphere in a market', etc. Most of the tracks last for only one minute or so, but of course can be recorded again and again on tape by the teacher for as long as is necessary for the role-playing. Most of this material is available in stereo to give a really effective background sound if facilities are available.

To reproduce the tapes when ready a small cassette recorder/playback machine is perfectly adequate, but to give sufficient volume for group use it should be connected to an extension loudspeaker, or a pair for stereo. Although most cassette recorders have an output of only between 3 and

6 watts RMS, this is quite enough to drive a small high-efficiency extension speaker with excellent results. Cassette recorders with extension speaker sockets should be chosen if you are buying new equipment, and advice from audio dealers will help in the selection of a compatible speaker.

RECORDING ROLE-PLAY

Class discussion following a simulation or role-playing exercise is very important because it is then that students evaluate their learning experiences and share both their insight into interpersonal relationships and appreciation of the objectives of the exercise. Recording the performance adds enormously to the value of the discussion session, because the play-back will reveal the actions and attitudes of the members of the class, how these were influenced by the leads and responses of others, both verbally (with an audio recording) and non-verbally (with a video recording). Ideally, role-plays should be recorded on video tape or cassette to get the greatest value from retrospective discussion and analysis, and the various systems and applications of video equipment are dealt with in the next section. However, if video is not available a great deal can be achieved with audio recordings alone, provided that care is taken to record and playback at optimum quality.

AUDIO RECORDINGS

Whereas a video recording can still be acceptable if the audio quality on it is only indifferent – such is the power of the visual medium! – an audio tape recording of poor quality is positively counter-productive, and is worse than no recording at all. People often think it is the quality of the tape recorder which determines the quality of the recording, but this is not the case at all. Even quite cheap modern instruments, like a simple mono cassette recorder, are capable of giving excellent results, provided that the basic principles of choosing and using a suitable microphone are understood.

THE MICROPHONE

This is the *sine qua non* of a good recording and, sensibly used, can give results almost as good as a professional sound studio, even on a run-of-the-mill cassette recorder. The first priority is to ensure that the cassette recorder bought for the job has an external microphone socket, so that a high quality instrument can be used instead of any built-in microphone on the machine itself or what passes as a microphone supplied with the recorder. Invariably, within a price range of between £20 and £100, the microphone supplied with a cassette recorder will be of relatively low sensitivity and limited frequency range, and the user will experience nothing but frustration in its use for a group recording. The distance of a member of the group from the microphone could easily be as much as ten feet or more, and although a low sensitivity mike may be used for a solo speaker or even an interview, it will spoil any attempt at recording a role-play, when the participants will probably be highly mobile and often turning on and off the face of the microphone. The whole essence of role-playing is to create realism, without any restriction because of the recording. In point of fact, the little microphones often built into cassette recorders are generally of the 'electret' (i.e. electrically-powered) type, and are quite sensitive, but of course suffer from the disadvantages that they cannot be placed in the centre of the action without being intrusive and also generally pick up the sound of the motor in the machine and spoil the quality of the recording. The principle of the 'electret' microphone has now been used in the manufacture of high-quality microphones which are ideal for the kind of recording being discussed – they are small and unobtrusive, extremely sensitive and able to pick up all the voices in the average classroom, and reproduce these sounds with excellent fidelity. They are also compatible with nearly all recorders, and are robust enough to cope with the hard use to which they are put in the teaching situation. They are not, unfortunately, cheap – in fact, the recommended type costs more than a good cassette recorder at something like £90, but it will solve all recording problems and give many years of faithful service. One very good mike of this kind is the Sennheiser K3U/ME 20 at a little more than £100, but having excellent sensitivity and fidelity. It consists of a powering module with a small battery (the K3U) and an omni-directional microphone capsule (the ME 20) screwed to it – the whole measuring only about 180 mm in length. Omni-directional means that all sound is recorded faithfully – even from behind the microphone – ideal for group recordings.

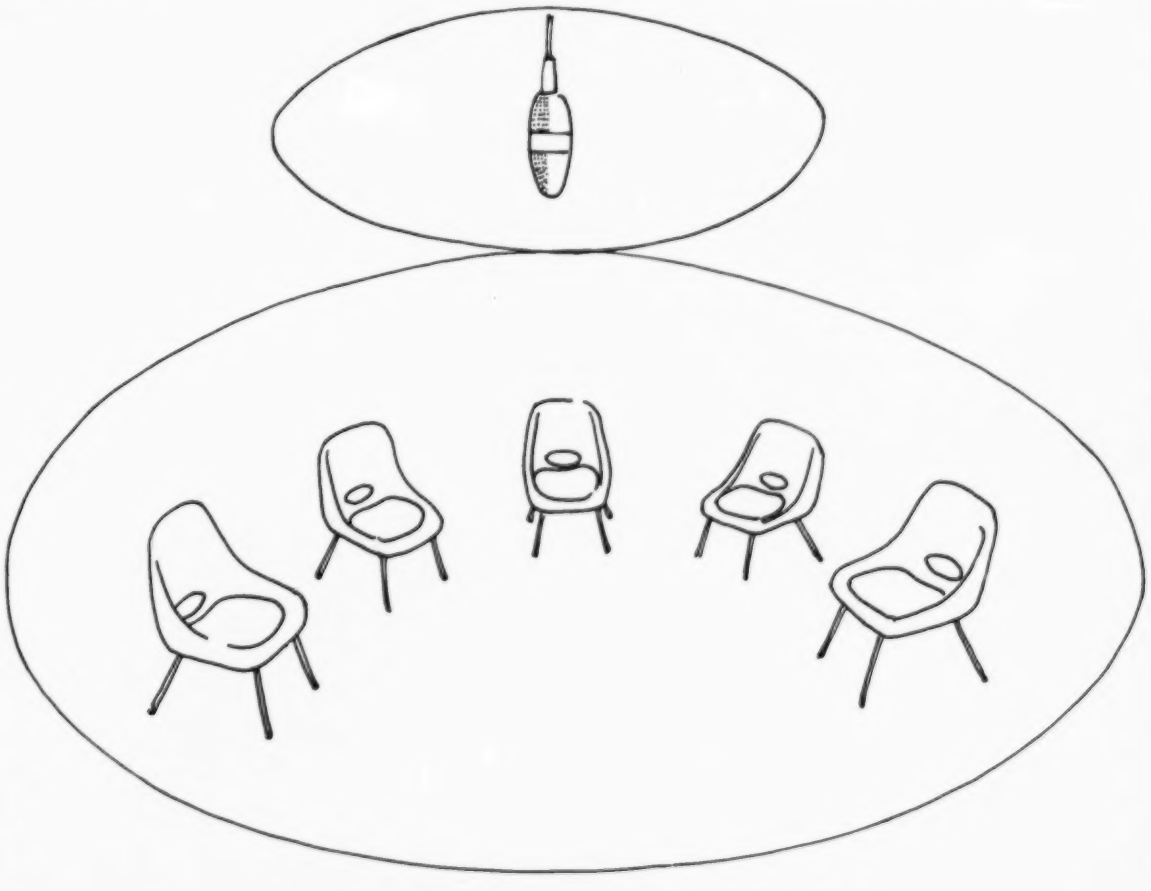
Because it is of the low impedance type, any length of cable can be used to connect it to the recorder, and the firm supplies this in 5, 10, or 20 metre lengths with the correct plugs at either end. Having purchased this composite model, the supply unit (the most expensive part of the microphone) can be used with other capsules for other purposes, like a tiny lapel attachment for talking on video cameras, or a 'shotgun' capsule for recording speakers or events from a distance when filming with film or video cameras. In other words, the basic unit makes the heart of an excellent microphone system which can deal with all kinds of recording problems. A foam windshield to prevent wind noise when recording outdoors is available for all the microphone capsules mentioned, at a price of approximately £6.

To record a role-playing group, it is best to hang the microphone above their heads by using one of the long connecting leads, which will give overall coverage and avoid any shocks of thumps or kicks on the floor or table legs. If hanging is impossible for some reason, always use a thick piece of foam rubber under a table stand or, better still, try to put the stand on a mantlepiece or bookcase away from vibrations.

There are, of course, many cheaper microphones available, but these are only about one third or one quarter the sensitivity of the electret variety, and are not so suitable for group recordings, even though omni-directional. Whatever microphone is used, however, remember the golden rule about hanging it up whenever possible, and *never* stand it in the centre of a table, as this will not only be vulnerable to all the rude shocks of movement but will also record voices in a very 'bassy' way, as they are reflected off the table surface. If a table has to be used, place the mike on one corner. If the recording room is large with a tendency to echo, point the centre of the microphone into one corner and so keep at least part of the echo at bay.

THE PLAYBACK

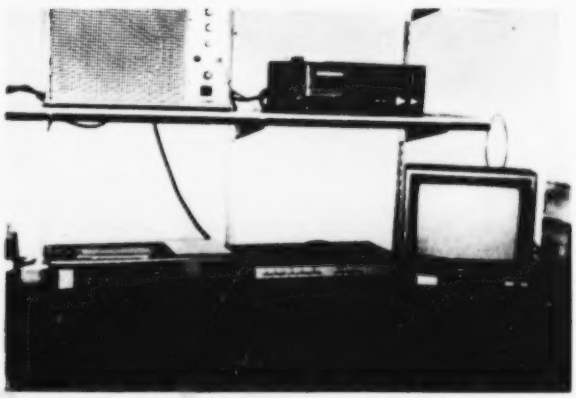
When playing back the completed recording, note the remarks above concerning the use of an extension loudspeaker to give better quality and volume. Some high efficiency speakers are now very small (about 9" × 6" × 6") and so are easily portable, yet give splendid results. In role-play analysis, the interjection or muttered remark may be as important as a more outspoken comment, and good microphones and speakers make the most of every word.



A suspended cardioid microphone, showing areas of sensitivity

7. VIDEO

Recording many adult learning activities in vision as well as sound can add tremendously to the value of subsequent discussion and evaluation. With the explosion in home video recording, the medium is now familiar to all, and the dramatic fall in the capital cost of equipment puts these admirable tools within the reach of most continuing education centres. Intelligently chosen and employed, the video recorder and camera are two of the best learning resources that money can buy. This section is not intended as an instructional manual of 'How to use video equipment', but rather as a guide for those who wish to explore the possibility of using video in the classroom, perhaps for the first time.



THE VIDEO/CASSETTE RECORDER (VCR)

Basically the video cassette recorder is a machine designed to record sound and pictures from television onto magnetic tape and play them back when required. Most pictures are now in colour, but the machines will record black-and-white signals just as effectively, and monochrome cameras are cheap and often more sensitive for low-light recordings. There is now the choice of two main systems or formats for domestic and budget educational use – VHS (Video Home System) and Video-8 (or 8 mm Video). Other systems, like Beta and Video 2000, are defunct or dying and restrict the user from interchanging tapes with other programme makers or from benefiting from the vast library resources available in VHS now and Video-8 in the very near future. Unfortunately, the two systems are completely incompatible and cannot be used to interchange tapes. At the moment, most homes and educational establishments use VHS, but it is likely that Video-8 will make rapid advances, so check before you hire or buy a tape.

Panasonic NV-180B portable VHS video recorder

If you do have a machine at home, you will know that the VCR works off the normal electricity supply and has a tuner to enable it to receive and record signals from a television aerial. With the aid of a timer, recordings can be made while the operator is out of the room or the building. How far ahead the timer can be set varies with each machine model. Recordings can also be made from one channel whilst another is being viewed. Tapes recorded on one machine will play back on any other 'compatible' machine (i.e. of the same system) although the tracking control may need slight adjustment to get the best quality picture. All machines have some kind of counter, either a very accurate electronic type, or a mechanical measure of tape length, enabling the tutor to log his visual material and select small sections for demonstration when required. Nothing is more timewasting or distracting to the students than to have to keep starting and stopping the machine in order to find a particular piece required for, say, discussion purposes. When you are selecting your material, simply press the counter button. When the tape has run its full course it can rapidly be wound back to point '0', which is the start of the relevant extract.

Some machines will hold still frame pictures, unhindered by moving lines – and this is very

useful in the classroom. This facility allows a particular 'shot' to be held for discussion or study, or a sequence of movements to be studied frame by frame.

Some machines will also erase the original sound track without interfering with the picture. This offers tutor and student scope for audio-dubbing, running their own commentary to the original pictures.

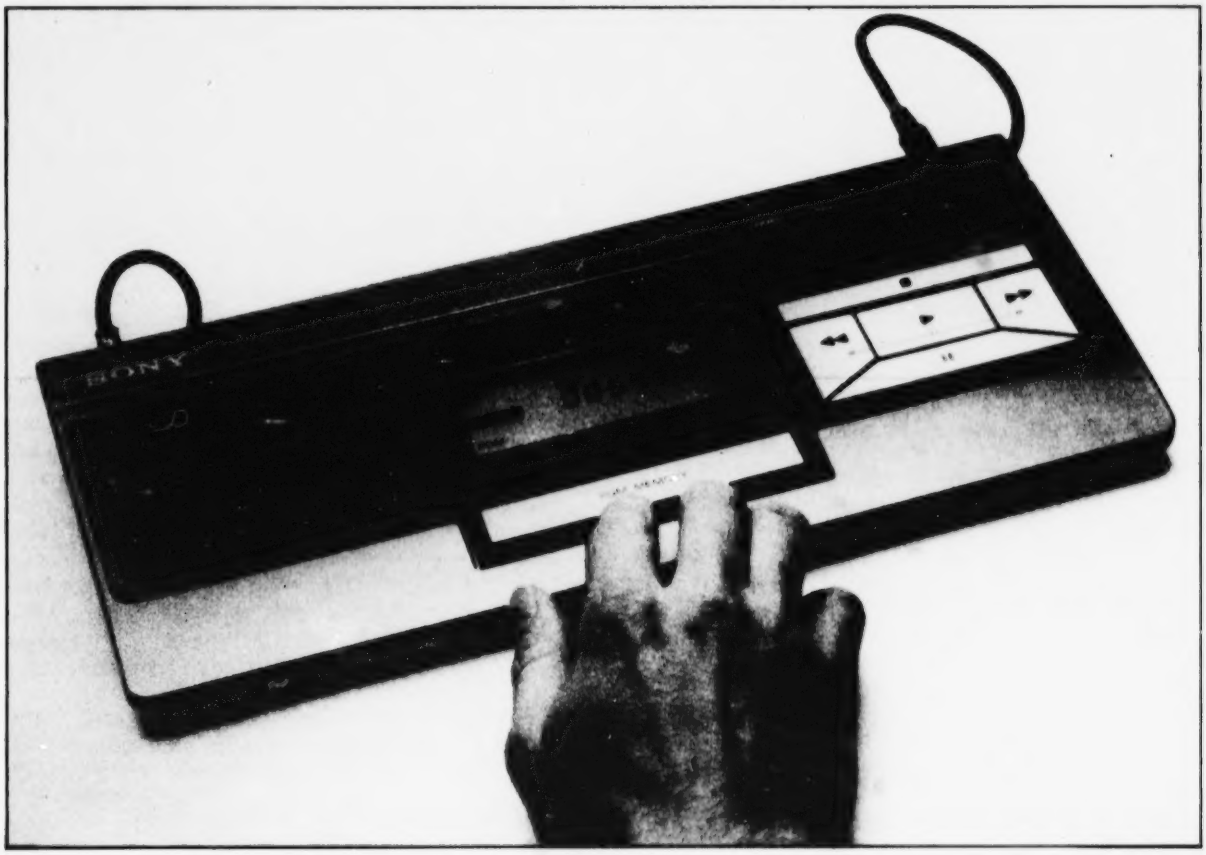
TYPES OF RECORDERS

Mains recorders

There are now over 100 VHS models on the market and a small growing number of Video-8 mains recorders. For educational use, the model to be preferred is one which is relatively simple to use and programme for time recordings (i.e. devoid of all the fussy knobs and buttons for superfluous 'extra facilities') and yet has the valuable features mentioned above: easy electronic search, good still frame, sound dubbing *plus* connection for a video camera. Excellent machines which lack the last facility may have a camera adaptor as an accessory. Some recommended machines are the Ferguson 3V43, JVC HR-D725, Panasonic NV-G188, and Mitsubishi HS-710 – but there are many more and models are constantly being improved and updated. The Sony EV-A300 is one of the recommended Video-8 mains recorders.

Portable recorders

These are powered by rechargeable batteries and invaluable for situations where mobility is essential, especially when recording with a camera, when mains power is not available, e.g. recording outdoors, drama, dance, film-making, etc. They do not have tuners built in for recording broadcast television programmes, but these can usually be obtained as accessories. The number of available models in both VHS and Video-8 is small and shrinking because of the advent of the Camcorder (see below) but a separate recording machine is often very useful, as it can be used with a variety of cameras and tends to have more useful features, like audio dub, slow motion, etc. Until very recently two Canon VR-30 portables (and also Olympus VC-101Bs and Panasonic NV-180Bs, which come from the same stable) could be connected together for creative editing purposes with a Canon VE-10 Editor, enabling tapes to be condensed, re-arranged and reconstructed for as little as £120. Unfortunately, Canon has moved into the Video-8 format and ceased production of the little editor, but there is hope that another manufacturer may pick up the gauntlet.



Sony RM-E 100 Editor

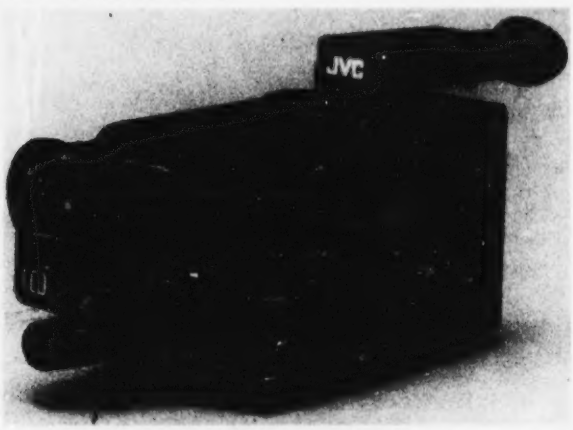
but there is hope that another manufacturer may pick up the gauntlet.

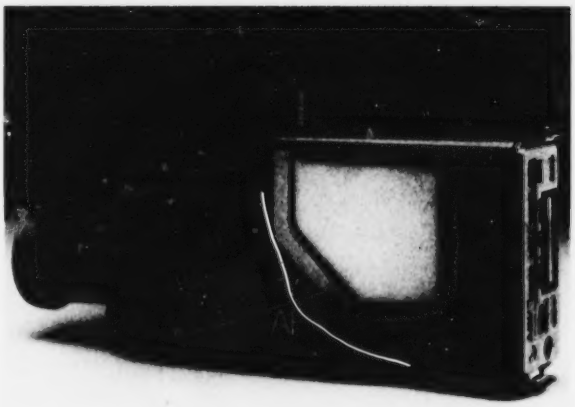
Meanwhile, Sony have introduced their RM-E100 Edit Controller to work between their portable EV-68 (Video-8) recorder and any mains-powered video recorder to give simple clean assembly edits. It will also work between *any* two video recorders, but take care to get advice on which connecting leads to use. This editor is not as sophisticated as the Canon, but may be its only replacement, and will give excellent results. The cost is nearly £200.

Camcorders

For sheer convenience and portability the Camcorder (a combined camera and video recorder running off rechargeable batteries) is hard to beat for educational use, and has certainly encouraged many more tutors to use video by overcoming their fear of handling (and connecting!) complicated equipment. Camcorders are of three types: those which use an ordinary (up to 4 hours' playing time) VHS tape, those using the small compact VHS tapes (called VHS-C and playing for only 30 minutes or 1 hour on long play) and the Video-8 group using the 8 mm video tape. Many of these machines have auto-focus as well as auto-exposure and the most recent have an automatic white balance, which means that the operator does not have the bother of adjusting the camera to the lighting conditions when filming. All this means that the machine becomes a relatively simple tool to create most valuable learning material, which can then be played back through an ordinary television set. (Generally from the camcorder itself, although some machines need a playback adaptor). The heaviest machines are those using full-size VHS tapes (about 2.8 kg without battery); the lightest is the JVC GR-C7 VHS-Camcorder at 1.4 kg without battery. All camcorders fall in the £1,000-£1,300 price range, although bargains are to be had as models are up-dated with slight refinements. Many of the camera components of these dual machines are now fitted with CCD (charge coupled device) chips instead of photo-electric tubes for their picture-making, making them lighter as well as less prone to damage

JVC Camcorder GR-C7





Sony Video-8 Camcorder

All camcorders (and cameras) fitted with tubes (generally called 'Saticon' or 'Newvicon') must never be pointed at bright lights, especially sunlight, to avoid almost certain tube damage. The new CCD chip is impervious to such damage, however, making these instruments much more suitable for educational use by students and of great value in creative dance/drama/film-making work because of the ability to film into the light for effect. Recommended camcorders fitted with CCD chips are the JVC GR-C7 (VHS-C format) – the Ferguson 3C03, Akai PV-C8, and Telefunken VR-2891 are similar to this machine – and the Sony CCD-V7AF (8 mm Video format) with the Aiwa CV-80, and Pioneer VE-M800 as alternatives. If you should prefer the full-length VHS camcorder then the Panasonic NV-M5B is the choice.

Cameras

If you prefer to use a twin-piece system (i.e. separate video recorder and camera) or want to use a camera with a mains-operated recorder, look for a camera with CCD chips rather than tubes in order to gain the advantages mentioned above. They are such recent arrivals that only two are available at the time of writing, the Panasonic WV-PF2 and the Hitachi MOS-IC, but there are many more on the way.

SOME USES OF VIDEO

There is a lot to be said in favour of making your own video material. Not least is that you will avoid copyright restrictions! But it is very useful to be able to record group discussions and demonstrations, role-playing exercises, trips and visits. Recording steps in a particular technique will enable some students to study a point they may have

missed, while the tutor and other students can move on to other things. It is a medium with endless possibilities.

Of course, the fundamental question every teacher should ask when considering the use of a particular medium is 'Is there a more suitable method?'. There is no sense in using a complex system if a presentation or summary can be put across in speedier or simpler ways. But to bring a topic to life, video and film are remarkably effective, and recent advances in video techniques are now giving it the edge over cine-film.

Video has become increasingly easy to use with the new complete camcorder units. Some everyday educational activities which would be enhanced by the thoughtful use of video would include:

- literacy tutors explaining their work with a view to recruiting volunteers;
- prison education staff 'selling' education to newly inducted prisoners;
- shots to support a lecture, illustrating particular points;
- publicity, advertising the work of a centre, or class, or service;
- recording 'one-off' demonstrations by visiting tutor;
- recording vital parts of the course for absent students to 'catch up';
- avoiding repetition of expensive demonstrations (e.g. A cookery tutor made a video of 'how to prepare and cook a salmon'. This avoided the inordinate expense of repeating the same demonstration 'live'. In fact the video scored over the real demonstration since it could be re-run to repeat certain vital processes time and time again).
- instant replay of role-plays and simulation;
- recording discussions and group behaviour;
- recording drama, dance, movement, action for replay and analysis/de-briefing, etc.;
- as a form of training – on a group or individual basis – exploring e.g. personal styles of delivery or behaviour;
- recording situational events to lead discussion;
- to vary the fare of a particular course – students find this a pleasant change and most stimulating.

MAKING YOUR OWN FILMS

Whilst film-making might sound grand it needs to be emphasised that mammoth productions are not the order of the day, but rather the recording of the simplest – and most telling – of activities related to your subject. Simple statements in sound and vision bring much vitality to the subject with commendable speed.

Before embarking on film-making it will be useful to compare the use of video with film:

Video

immediate playback after recording.

economical: £4-6 for 3 hours. Tape is re-usable (although for the best results use new tape).

continuity: recordings can be added.

compact: between ½-hour and 3 hours on one tape, with longer on 'long-play'.

longer playing life – with care, can be played time and again without damage to tape.

editing can be done both in camera and immediately after shooting.

replay on ordinary television set in relaxed situation

– BUT impossible to animate

Super-8 film

has to be sent away for processing.

£8 for 3½ minutes, and not re-usable.

films have to be joined and edited.

20 minute reel maximum.

film becomes scratched and torn after a while.

editing also possible in camera, but otherwise must await return from processing.

special projector and darkened room necessary.

animation by still frame and time lapse very easy.

What is needed

The simplest arrangement is to use an ordinary mains VCR with a simple colour camera. Cameras can be hired by the day. If fortunate you may be able to borrow one – but be sure to ask for the instruction manual. It is also useful to note that most colleges, adult education centres and youth centres, as well as many schools have their own video systems. Negotiate a loan – or a collaborative production!

Operation

Simply connect the camera cable to the 'CAM' or camera socket on the recorder. On most VCR models this is located on the front. For comfortable

trouble-free recording some of the following would prove useful:

Camera with shoulder holster to minimise camera 'shake'

Tripod gives good steady shots

Camera extension lead to allow greater freedom of movement (if using a twin-piece system)

Portable battery operated recorder is recommended if you intend to record out of doors

Spare batteries essential

Tape on which to record – be sure to purchase one compatible with the recorder

It is important to try out the equipment before you arrive at the location – not only to ensure you are familiar with its format and workings, but also to check that everything is in working order.

Pre-planning

Like all teaching systems the use of video requires careful planning. Begin by asking yourself:

What do I want to record?

Why?

Who is the film for – who will watch it?

Why?

What purposes will the film have – primary and secondary uses?

Will it be used more than once?

Will it be a central part of my teaching strategy?

How?

From the answer to these and other questions you will be in a better position to set your aims and objectives and to plan the best use of the filming situation/requirements.

1. What do you wish to film?
2. Does it need a special/particular scenario?
3. Is a special location required?
4. Will props of any kind be needed? Lighting? Sound effects?
5. Is a script called for?
6. What briefings do the participants require, if any?

Next you have to book your equipment – indicating the type you require; the date and the length of time you will require it. It helps to speak to the technician in charge of the equipment and arrange a time when you can call and check the equipment. You may need a quick refresher course to familiarise yourself with it. If the technician knows the details of your assignment he/she will be able to make suggestions. Ask for, and carefully read, the instruction manual to the equipment and give yourself plenty of time to 'play' with the equipment *before* you arrive on location.

Setting a scene

There is nothing better than the REAL thing – the real background. Often, however, inaccessibility, weather, expense and so on are real obstacles and so we have to make do with simulations.

For example, if our course on First Aid is dealing with a traffic accident then an outdoors location and the presence of a vehicle would be useful – but only in an initial/scene-setting way. Still photographs could also be used to start the film – accompanied by a relevant sound-track – but the main part of the film – the handling of the victim – could be filmed on a completely neutral (indoor) set, preferably with a plain background (a white wall?).

Again we might wish to bring a case study 'to life', e.g. the background to unemployment and deprivation in, say, Liverpool 8. The camera could scan the actual neighbourhood but again still photographs can be filmed – enlarged and used as a picture behind the heads of the participants. The sequence of shots would begin:

The proposition (What we are examining...)

'This is the neighbourhood...'

'Here is the street...'

'This is Mrs...'

'This is the house...'

'These are her children...'

'Meet the social worker...'

'This is the local priest...'

It is useful to begin with reality, but the main production would proceed in closed contexts with the tutor and students role-playing. After all, you are not making a documentary – rather seeking to stimulate awareness, discussion etc. for the class. It follows that in situations where there is to be use of role-playing, the tutor should lead (playing the most difficult role). If so, the 'shooting' would have to be done by the class, or fellow tutors.

Camera techniques

1. Next time you watch a television programme note how long each camera shot is. It will vary according to the programme, but there are some general guidelines. Shots that are too short tend to make the finished film look jerky. However if shots are too long they can be boring. Careful timing results in well balanced shots: the recommended time is 5 to 7 seconds per shot.
2. Shadows can be a problem – whether from electric light or from the sun. Try always to keep sun and light behind you.
3. Where the camera has a built-in microphone the cameraperson must not

speak as the microphone will best pick up the sound nearest to it.

4. Don't rely on the built-in microphone. Poor sound will distract the viewer and spoil the production. Consider using an additional 'mike' – a 'tie mike' or one on a stand (see recommended microphone in Section 6).
5. Where you intend to dub the sound on afterwards then verbal instructions can be given to the cameraperson. However, adding the sound later – called 'VOICE OVER' requires careful scripting if it is to be accurate (timed), creative and relevant.
6. Don't film from a fixed position of level – try different angles. Zoom and pan *very* sparingly – watch the professionals!
7. After several attempts at handling the camera you will become more confident. Begin by planning and researching well what you wish to cover. Remember you are telling a story – so watch the sequence of shots. DON'T reverse motion from shot to shot or change horizons or points of interest too disturbingly.

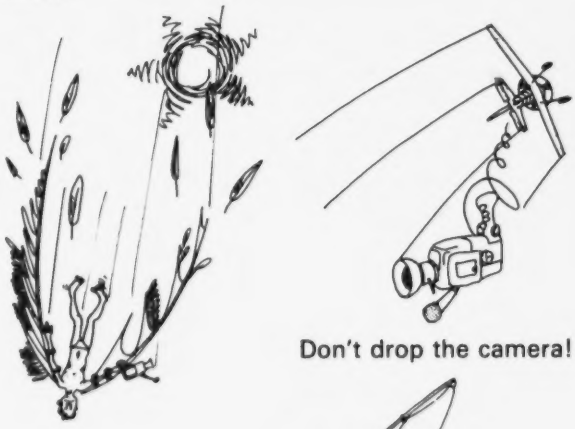
The white balance is the term used to describe how well we balance colours as seen *by* the camera. The camera cannot differentiate between, say, white and blue. It has to be set. It is done simply by pointing the camera at the particular background at the same time pressing the white balance button (on some machines this may be a knob) until the light goes out. This is a quick adjustment and once made the camera will remember it. Latest cameras and camcorders have a sensor which sets and maintains white balance.

A ZOOM lens functions in the same way as a telescope. When one 'zooms in' the picture closes with the subject. 'Zooming out' makes the picture more distant. Most cameras have this facility. Use the zoom normally for focusing – frequent use of the zoom when filming is amateurish and detracts from film quality.

Macro Focus means that the lens has the ability to focus in on an object – as close as several millimeters. This is particularly useful for demonstrations and experiments.

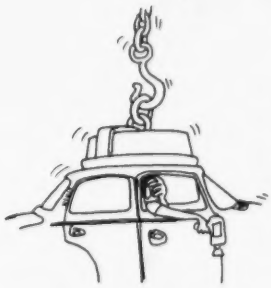
Some tips on using video

Don't point camera at direct light whether natural or artificial, unless it is using CCD chips instead of tubes.



Don't drop the camera!

Don't get the camera wet.



Don't use the camera near a magnetic field and keep video tapes away from car engines.

Keeping video equipment in the car boot overnight will lead to condensation when you record in a warm room. Leave the equipment indoors long enough to reach room temperature.

Mastering any technique requires commitment, patience and time. Video is no exception. The key word is PRACTICE. One thing is certain, however: introducing video to your class can open up a whole new world to both you and your students. Television is now in everyone's experience and logically we should seek to make it a feature in our teaching.

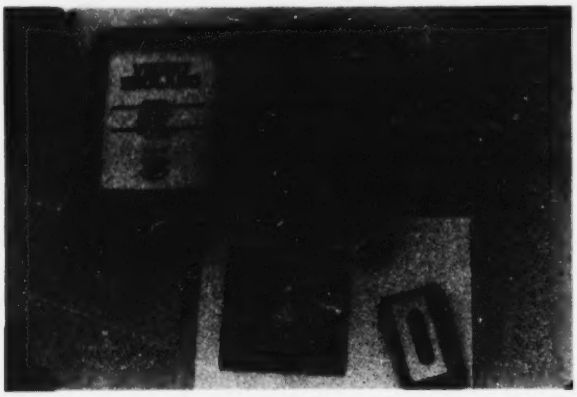
8. COMPUTER-ASSISTED LEARNING

This is a very difficult section to write; for whom is it to be written? If you are a tutor with no computer of your own and no access to one in your centre (and many centres are not yet well-equipped in this area) you may have one of two reactions: you may turn to Section 9 as quickly as possible crying 'this is not for me' or you may look to these pages to contain the complete rundown on everything about computer technology and its uses. On the other hand, you may be a tutor who already uses a computer in your classes. You will be familiar with the technology and usage but may turn to this chapter for additional information about learning packages, new ways to maximise the potential of your teaching aid or for details of addresses or useful further reading. In attempting to reconcile all these requirements it would seem that brevity and direction pointers are needed.

The complete set-up – disc drive, keyboard, TV monitor and printer

USING THE COMPUTER AS AN AID TO LEARNING

As with every learning aid it is essential that you use the computer with confidence and adequate planning. However, it is important to stress that you do not have to be a 'computer buff' in order to load and run a commercial software package. Many tutors assume that they have to learn programming and, while this is a useful skill enabling you to write your own appropriate material, it is not essential. You need to be familiar with your machine or the one in your centre; how to set it up, load the program, use the keyboard, find the part of the program you are demonstrating and what to do if things go wrong. These mechanics are easily learned, either from the manufacturer who may provide initial training, from a helpful colleague, by attending a short course at your centre, and/or from the manual. A word of warning here: as learning aids, computer manuals leave a lot to be desired. Some are extremely difficult to understand and some have been known to contain misinformation! But persevere and use the manual to its maximum; many people work through the first few pages to find out how to set up the machine but fail to discover all the other things it can do.



Cassettes and discs

In most applications the computer program is an integral part of your teaching strategy together with other elements including preparatory investigations, worksheets and follow-up notes and exercises. Adult tutors have found computers useful in the following areas:

a. Skill acquisition and testing and diagnostic evaluations.

   The computer is used with an individual student. With the correct program the computer can be patient and understanding, uncritical and impartial. It has the ability to keep progress reports and automatically adjust the level of work to suit the individual student.

Lidak is a severely mentally handicapped student who can neither say nor write his own name but recognises it when it is written down. A program was written for him which printed his name in large lowercase letters on the screen. He had to find the equivalent capital letters on the keyboard and press them in the correct order. A correct keystroke wrote the letter on the screen under the original letter. An incorrect keystroke did nothing. Lidak has a very forceful personality. Although the program was written so that he couldn't stop it running he very soon discovered that switching the computer off and back on again enabled him to indulge in his favourite pastime of pressing keys at random and proclaiming that he had written his brother's name. This story indicates that it is most important to choose a program that actually reinforces the required skill.

b. As a stimulus in small group work.

The computer can stimulate discussion and negotiation among small groups, particularly in the development of concepts and communication skills. It is in this role that it is most useful. For instance, a French tutor may know nothing about computers, but one of his class might have a machine and the 'A vous la France', BBC software. Why not invite her/him to bring the equipment to the class and demonstrate it?

Adult basic education tutors have had great success using programs which enable small groups of students to design the front page of a newspaper, or cooperate in the writing of short stories. The computer is an invaluable aid in activities where it can take over the mechanics of production and organisation, leaving the students free to concentrate on ideas, negotiation and interaction.

c. Stimulations with large groups.

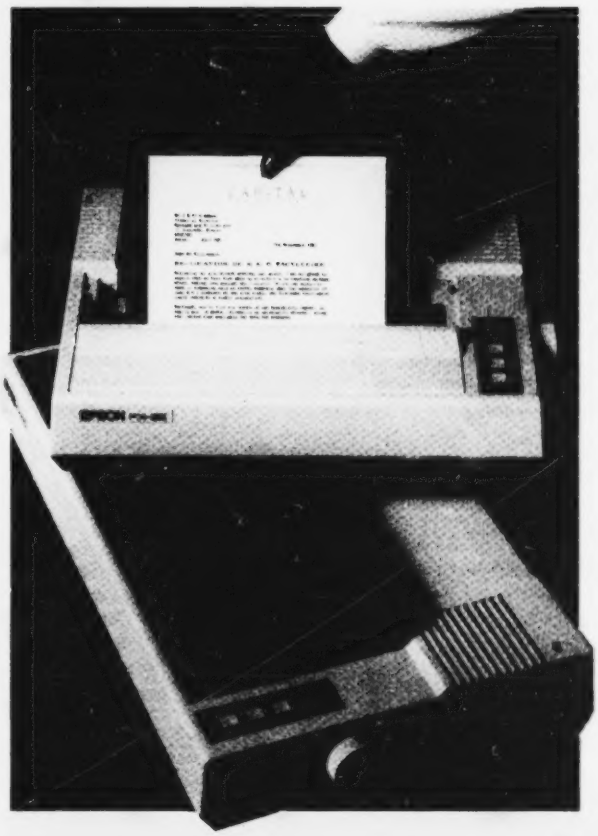
It can run all kinds of financial and physical models giving opportunities for experimental learning which would be too time-consuming or costly by any other method. For example, the computer has the ability to replay an historic event with the facility to change the outcome by altering the conditions and decisions taken by the original participants. It can also provide vast amounts of 'experimental' data for students to test their hypotheses.

d. The computer can provide access to the many databases in existence making the acquisition of up-to-date statistics, bibliographical searches, information etc. a simpler matter. Prestel Education, which is offered at a varying rate to different educational establishments, includes specialist databases such as ECCTIS and POLYTEL, courses guides, SEND (Special Educational Needs Database) and the Schools Telesoftware Service, which is a valuable source of curriculum support packages, data files and free samples.

e. In fitness and relaxation classes, connected peripherals such as heart rate monitors and bio-feedback devices can be used for monitoring and evaluation.

f. Desk-top publishing (DTP) is becoming common in offices and businesses and is being taken up by educational establishments. The equipment is expensive, but if tutors have access to DTP in their centres, they are able to produce worksheets, handouts and OHP originals of a graphically professional standard quickly and easily.

EPSON FX-series printer



FURTHER INFORMATION

If you are new to this technology, don't be afraid of it. Find out about it by using the professional services available in your local authority, college or centre and by talking to other tutors who already use computers in their classes. Ask your centre head or adult education adviser if a course for interested part-time tutors could be organised in your area.

There is a lot of help available from people and organisations who have seen the potential of computers and have already applied them to teaching adults. Stephen Bostock and Roger Seifert, of the University of Keele, published an interesting article, 'Introducing a microcomputer into adult education classes' in *Adult Education* (NIACE), Volume 55, No. 4, March 1983. The same authors and Jack McArdle write on 'The effects of learning environment and gender on the attainment of complete literacy' in *Studies in the Education of Adults,* (NIACE) Volume 19, No. 1, April 1987. The *Computers in Adult Basic Education (CABE)* group consists of teachers who have been working for some years on teaching adults with the aid of microcomputers. CABE publishes a newsletter and can recommend programs its members have tried out: contact *John Taylor, Harrison Adult Education Centre, Lower Hollin Bank Street, Blackburn, Lancs.* The *Scottish Community Education Microelectronics Project (SCEMP),* based at the *Scottish Council for Educational Technology, Dowanhill, 74 Victoria Crescent Road, Glasgow G12 9JN,* has produced several useful reports including one, in 1982, entitled 'Guidelines for the design of computer programs for community use'. The Open University is a good source of information including the OU Course PM252 on 'Computers and computing'. The *OU Institute of Educational Technology* can also offer published reports on learning with computers. Further details from *Open University, Walton Hall, Milton Keynes MK7 6AA.* The January 1987 issue of *Practical Computing* has an informative and comprehensive article on up-to-date desk top publishing which might provide ideas for use with less expensive equipment if the latest technology is not affordable. Other journals worth a look are the *Journal of Information Technology* and the *Journal of Educational and Training Technology.* A collaboration between Birmingham Education Authority and the computer-manufacturer NCR has resulted in three computer-based training kits for adult education tutors. The package consists of a user-handbook, bibliography and floppy disc with PC compatible software and the five modules help tutors to plan and evaluate courses for their adult students (more information from *NCR, 206 Marylebone Road, London NW1 6LY). Community Computers UK (CCUK),* is one of the main operational divisions of *Inter-Action, Royal Victoria Dock, London E16 1BT.* It provides computer training, consultancy and many model project developments for the voluntary and statutory educational and other sectors. Software and hardware assessment and recommendations available. Tutors with IBM pc or BBC micros may be interested in an authorising system developed by *Information Transfer, Burleigh House, 15 Newmarket Road, Cambridge CB5 8EG,* which enables instructors to develop their own computer-aided learning courses without programming. It is a very flexible system but the package, with user guide, is rather expensive. The *Further Education Unit (FEU), Courseware Unit, Elizabeth House, York Road, London SE1 7PH* has set up a database of available programs, some of which would be useful for adult education tutors. Details are available in the FEU's Courseware Newsletter. *Prestel Education* is at *Telephone House, Temple Avenue, London EC4Y 0HL.* (01 822 1012).

Finally, the *Council for Educational Technology, 3 Devonshire Street, London W1N 2BA* is a most valuable source of help and advice for the experienced or not so experienced tutor eager to make use of the best available software packages.

9. A NOTE OF CAUTION

In the use of resource material it is possible to develop a teaching style so vivid and colourful that the lesson becomes a star performance. The students are spellbound and feel well entertained, but they are passive spectators, and there is often little learning taking place. Do not assume that you are teaching well, just because the class is giving you rapt attention. We are teaching well when our students are thinking, and sharing their thoughts and ideas.

When considering the part resource material should play in our teaching, we should remember the old saying 'When I hear, I forget; when I see, I remember; when I do, I know'. 'When I hear, I forget' restates our suspicion of the purely verbal mode of teaching. 'When I see, I remember' – yes, but do not assume that a high standard of visual presentation is all there is to teaching. 'When I do, I know' reminds us that teachers can never do the learning for the students. We can never make things as easy as that. Practice – or rather practising – is still an essential part of learning.

It can happen too that resource material, while being carefully planned and executed and strategically placed in the session, can be too good, too clever. This can be a danger in a practical session, when the students may see in the exemplar a standard which they consider beyond their capabilities. Here the teaching aid becomes a contradiction in terms, since it actually discourages the students. Standards need to be set and performances arranged with subtlety.

Again it can be a mistake for a teacher to assume that a particular piece of resource material is a once-and-for-all means of defining, illustrating or solving a learning problem. A good teaching aid has its origins in the particular teacher/student relationship and will not necessarily be as effective on another occasion.

We can easily be tempted to go on using a teaching aid 'for its own sake' – because it is ingenious and attractive and we are proud of it. With your present class is that aid still relevant? Would that point be better made another way this time? And was some of that resource material so expensive to make or buy that we feel we must go on using it? Always beware of teaching to the resource, rather than to the point. And finally, be careful that you do not insult the intelligence of your students by using resource material just to fill in time: that is simply not teaching, but is taking people's time – if not their money – under false pretences.

10. FURTHER READING AND USEFUL ADDRESSES

FURTHER READING

This is a brief selection of recent publications. For a more detailed reading list, contact the NIACE Research, Library and Information Section (0533 551451) for a complete bibliographical database print-out.

CHAPTER 1

Adults as learners, by K. P. Cross (Jossey-Bass) 1981

The trainingof part-time teachers of adults, by T. B. Graham, J. M. Davies, T. Sullivan, P. Harris, F. E. Baum (University of Nottingham, Department of Adult Education, 14-22 Shakespeare Street, Nottingham NG1 4FJ) 1982

The aims of adult education – University of Manchester monograph No. 17, by J. Hostler (University of Manchester, Centre for Adult and Higher Education, Manchester M13 9PL) 1981

Adult learning, by R. B. Lovell, (Croom Helm) 1980

How to tutor and support learners, by R. Lewis (Council for Educational Technology, 3 Devonshire Street, London W1N 2BA) 1984

The application of learning theory to adult teaching, by K. MacKie (University of Nottingham, Department of Adult Education, 14-22 Shakespeare Street, Nottingham NG1 4FJ) 1981

Adults in education, by J. Rogers (BBC Publications) revised 1985

The training of adult educators – learning about the learners, (P510) (Open University, Centre for Continuing Education) 1983

CHAPTER 2

Learning from experience: resource materials and ideas for learning, by J. Mace (Broadcasting Support Services, 252 Western Avenue, London W3 6XJ) 1980

Resources for adult learning in the East Midlands, by L. Cox, P. Gibson, P. Sturgess (University of Loughborough, Department of Library and Information Studies, Loughborough, Leics LE11 3TU) 1984

CHAPTERS 3 and 4

Do it yourself graphic design, edited by John Laing (Ebury Press, National Magazine House, 72 Broadwick Street, London W1V 2BP) 1984

Print – how you can do it yourself, by Jonathan Zeitlyn (Inter-Change, 15 Wilkin Street, London NW5 3NG) 1980

Effective publicity and design – a new self-help guide, by Jonathan Zeitlyn (Inter-Change, 15 Wilkin Street, London NW5 3NG) 1987

1000 pictures for teachers to copy, by Andrew Wright (Collins ELT) 1984

CHAPTERS 5 and 6

Audio-visual guide for community groups, (Community Projects Foundation, 60 Highbury Grove, London N5 2AG) 1985

The use of microphones, by Nisbett, (Focal Press, Borough Green, Sevenoaks, Kent TN1S 8PH) 1983

Using your overhead projector and other visual aids, by Chris Waller (Ofrex Office Supplies Limited, Unit 2, Engineers Way, Wembley HA9 0EG)

CHAPTER 7

The complete handbook of video, by Owen and Dunton (Penguin Books) 1983

Video know-how, by Karl-Heinz Lautner, (JVC (UK) Ltd, 82 Piccadilly, London W1) 1984

Using videotape, by Robinson and Beard, (Focal Press, Borough Green, Sevenoaks, Kent TN1S 8PH) 1981

CHAPTER 8

Microtechnology and the education of adults, (ACACE, c/o 19B de Montfort Street, Leicester LE1 7GE) 1984

Computers and adult learning, by Elisabeth Gerver (Open University Press) 1984

Humanizing technology: computers in community use and adult education, by Elisabeth Gerver (Plenum Publishing Co. Limited) 1986

New developments in computer-assisted language learning by D. Hainline (Croom Helm) 1986

The following organisations publish materials relevant to Chapters 3 to 8 and will send publications lists on request:

Broadcasting Support Services
252 Western Avenue
London W3 6XJ
(01 992 5522)

Centre for Information on Language Teaching and Research (CILT)
Regent's College
Inner Circle
Regent's Park
London NW1 4NS
(01 486 8221)

Council for Educational Technology (CET)
3 Devonshire Street
London W1N 2BA
(01 580 7553)

Crafts Council
12 Waterloo Place
London SW1Y 4AU
(01 930 4811)

Educational Foundation for Visual Aids
National Audio-Visual Aids Centre and Library
The George Building
Normal College
Bangor
Gwynedd LL57 2PZ

ILEA Learning Resources Branch
Centre for Learning Resources
275 Kennington Lane
London SE11 5QZ
(01 633 4203)

USEFUL ADDRESSES

Most of the firms listed below produce comprehensive catalogues, many of which are highly imaginative and informative.

CHAPTER 3

SELF-ADHESIVE TAPES AND SHAPES (First look at the shops in your locality – stationers, arts and crafts shops, drawing office suppliers, etc.)

Chart-Pak Limited, 14/17 Station Road, Didcot, Berks OX11 7NB. (0235) 812607	Adhesive shapes and symbols
SASCO, Sasco House, 27 Hastings Road, Bromley, Kent BR2 8NA. 01 462 2241	Magnetic and adhesive shapes and tapes
Magnetic Displays, 91 Endcliffe Road, Sheffield S10 3ET. (0742) 664610	Magnetic shapes, tapes and symbols
John Gosheron & Co. Ltd, PO Box 21, Grove House, 551 London Road, Isleworth, Middx TW7 4DT. 01 847 3901	Heavy-duty two-sided tape

CHALK, INKBOARDS etc.

Wilson & Garden Limited, 17/21 Newton Street, Kilsyth, Nr Glasgow G65 0JX. (0236) 823291	Chalkboards, revolving chalkboards
A. P. Unsworth Limited, Monton Fields Road, Eccles, Lancs M30 8BA. 061 789 5099 or 8001	Black, white and ink boards

CHALKBOARD OUTLINES/TEMPLATES

Stanley Thornes & Hulton, Old Station Drive, Lekhampton, Cheltenham GL53 0DN. 0242 584429	General suppliers, whiteboards

LETTERING

Grafex, Roslin Road, South Acton Ind. Est., London W3. 01 992 7083	Cork letters, stencils, adhesive lettering etc.
Samuel Jones & Co. Ltd., Butterfly House, St Neots, Cambs. PE19 4EE. (0480) 75351	Cardboard lettering, stencils and lettering
M. Myers & Son plc, Vicarage Street, Oldbury, Birmingham B68 8HF. 021 552 3322	Peg-board letterings and fittings

DISPLAY SCREENS

Marler Haley Limited, Queens Road, Barnet, Herts. 01 449 9611	All exhibition and display equipment
British Turntable Co. Ltd, Emblem Works, Bolton, Lancs BL3 5BW. (0204) 25626	'Kepac' display boards, display turntables etc.

CHAPTER 5

3M (United Kingdom) plc, Yeoman House, 57 Croydon Road, London SE20. 01 659 2323	Hardware and software, including OHPs, Thermal copiers
Ofrex Office Supplies Limited, Black Arrow House, Chandos Road, London NW10 6NE. 01 965 8855	OHPs and software
Elite Optics, 354 Caerphilly Road, Cardiff CF4 4XJ. (0222) 623201	OHPs
Transart Limited, East Chadley Lane, Godmanchester, Huntingdon PE18 8AU. (0480) 51171	Large selection of OHPs, Hardware and software, Makers of 'Flipitran'
Transaid, Francis Gregory & Son, Spur Road, Feltham, Middx TW14 0SX. 01 890 6455	Hardware and software for OHPs
Bell & Howell Limited, Alperton House, Bridgewater Road, Wembley, Middx. 01 902 8812	Hardware including 16 mm projectors and 797 sound/slide projector
Rank AV Ltd, PO Box 70, Great West Road, Brentford, Middx. 01 568 9222	Hardware and software
Polaroid (UK) Ltd, Ashley Road, St Albans AL1 5PR. (0727) 59191	'Instant' OHP and 35 mm transparencies
Cine Screens Ltd, Leighton Road, Linslade, Leighton Buzzard, Beds LU7 7LF. (0525) 372775	Projection screens
ELF Holdings Ltd, 836 Yeovil Road, Slough, Berks SL1 4JG. (0753) 36123	'Cee Projector', screens
Kodak Limited, PO Box 66, Kodak House, Station Road, Hemel Hempstead, Herts HP1 1JU. (0442) 61122	Light boxes and stockists of all photographic requirements
Slide Centre Ltd, 17 Broderick Road, London SW17. 01 223 3457	35 mm slides and projectors, full range of audio/visual material
The AVM Materials Supply Co. Ltd, AVM House, Hawley Lane, Farnborough, Hants. GU14 8EH. (0252) 540721	Full range of audio/visual materials
National Audio-Visual Aids Centre, Paxton Place, Gipsy Road, London SE27. 01 670 4247	Software

	BBC Publications, 35 Marylebone Road, London W1M 4AA. 01 580 5577	Software
	Educational Foundation for Visual Aids (Sales/Service), Unit 5, The Sidings, Hainault Road, London E11. 01 539 2047	Information on all audio-visual equipment
	The Force Ten Co. Ltd, 183 Boundary Road, Woking, Surrey GU21 5BU. (048 62) 62711	Equipment stands
	Unicol Engineering, Church Lane, Marston, Oxford OX3 0PA. (0865) 240141	Equipment stands
CHAPTER 7	Hayden Laboratories Limited, Hayden House, Chiltern Hill, Chalfont St Peter, Bucks SL9 9UG. (0753) 888447	Microphones
	Hargreaves Audio-Visual, 204/206 Warbreck Moor, Liverpool L9 0HZ. 051 525 1786 and Unit B, Tanzaro House, Ardwick Green North, Downing Street, Manchester M12 6JH. 061 273 2615	Video equipment, general advice and supplies as above
	Jessop Video Centre, 67/69 New Oxford Street, London WC1. 01 240 6077	as above
	REW Video Products Ltd, 118 Garratt Lane, London SW18. 01 870 9711	as above
	Falcon UK Ltd, 10/12 Broomfield Road, London W13. 01 840 1677	New/used video/film equipment of all kinds

VIDEO COURSES

General and longer courses are held at:

North East London Polytechnic, Short Course Unit, Longbridge Road, Dagenham, Essex. 01 590 7722 ext 2110

The Polytechnic of Central London, 309 Regent Street, London W1R 8AL. 01 580 2020

National Audio Visual Aids Centre (NAVAC), Paxton Place, Gipsy Road, London SE27. 01 670 4247. (Information also available)

Short intensive weekend and mid-week residential/non-residential courses are held at:

Burton Manor College, Burton, South Wirral, Cheshire L64 5SJ. 051 336 5172/3

The Lancashire College, Southport Road, Chorley, Lancs. PR7 1NB. (025 72) 76719

Wensum Lodge, King Street, Norwich, Norfolk NR1 1QW. (0603) 666021